MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

VOL. 155, No. 12 AUGUST 1942 WHOLE No. 2715

Rehabilitation of Rejected Candidates for the Air Corps

The August issue of the magazine, *Flying*, contains a feature article captioned "Pilot Saver". It is written by E. Jay Doherty and sets forth facts concerning the activities of the American Flying Service Foundation, Inc., which is busily engaged in rehabilitating rejected candidates for the Army and Navy Air Corps. The service was founded and is being conducted as a volunteer measure to help win the war by flyers from the first world war. Dr. S. M. Strong, flight surgeon, of New York, N. Y., is in charge of the medical division of the enterprise and maintains an office at 140 East Fifty-fourth Street for the examination, advice and referring of candidates for operation or treatment as required. Expenses are paid by voluntary contributions from Americans who are interested in these fine boys. There is also an "adopt-a-pilot plan" whereby any kindly disposed person may contribute one hundred dollars to defray hospital and other expenses and keep track of the candidate throughout his subsequent career.

Out of ten young men who wish to get into the Air Corps, eight are rejected before enlistment. If physical defects are correctible, four of these eight can be rehabilitated and may present themselves for re-examination by the United States examiners. Obviously, conditions which would require several weeks or months for correction cannot be taken on, irregular teeth, for example. Fillings, inlays, and fixed bridges are allowable, but removable bridges are a bar to admission. The reason for this is that at high altitudes, thirty thousand feet or more, which fighter and certain bombing planes must reach, anything is likely to happen, and loose teeth may lodge in the air passages causing fatalities.

Of all nasal obstructions, deviated septum is the commonest. Fortunately it can be corrected and the candidate can be certified to the Air Corps in about two or three weeks. However, sinusitis with postnasal discharge can seldom be cured in a few treatments, and extensive operations would also bar the applicant. Aural conditions, deafness even though "moderate", and chronic discharging ears are not amenable to "cure" from a flying point of view. Out of a vast experience the Air Corps knows why the requirements must be exacting. At high altitudes, hemorrhages may take place in the tympanic membrane, in the middle ear, and from the nasal mucous membrane. Any infectious condition, "a cold", for example, may favor bloody exudate, cause great discomfort, disturb the sensorium of the flyer and result in a "blackout", with plane and flyer crashing to earth. Many well-meaning persons who have never been higher above ground than the Empire State building do not understand the exacting conditions which must be met, and speak of the regulations as "fussy." But when one knows the facts, it is easy to understand how minor defects which "do not bother" one on the ground, can be greatly magnified in the rarefied atmosphere five miles up.

In about three months, from the end of April to the end of July, one rhinologist alone, Dr. Irving Voorhees, has certified twelve boys to the American Flying Service, and through that organization to the United States Air Corps. The aim is to have specialists in every city and town of importance work with the cadet flyers through authorization of the Flying Service. If this can be done, and it is being done right now to a definite extent, thousands of fine young men can be reclaimed for the Air Corps, who may and doubtless will bring defense to their country and honor to themselves. This is the kind of patriotic service aviators from the first world war who, because of "age," are grounded for their remaining years, are performing for their beloved land. It might well serve as an example to the complacent and luxury-loving among us who seem to be emulating the ostrich.

Evolution in Europe

A book was brought out recently in England with the somewhat misleading title of *Race, Reason, and Rubbish,* which contains much good sense and sane argument. It was written by Gunner Dahlberg and translated by Lancelot Hogben, F.R.S. Sir Arthur Keith, a leading anthropologist, reviewing it in the *London Sunday Times,* regards it as a really solid contribution to our knowledge of how evolution is working out its effects on the peoples of Europe. He points out that Professor Dahlberg has made Uppsala a Mecca for all who seek to understand the mode in which the ma-

terial basis of heredity, the "gene equipment", of one generation is transmitted to the next. With these views Sir Arthur is in perfect agreement. For several years he has been inveighing against those who teach that all European peoples are mongrels compounded out of those hypothetical "pure" races, Mediterranean, Alpine and Nordic. On this phase of the subject Prof. Dahlberg has this to say: "In reality, this involves an assumption which lacks any pretence of certainty. There is no reason whatever for presuming that there was ever in Scandinavia a pure Nordic race, subsequently contaminated in this way . . . It is plain nonsense to say that a brother and sister belong to different pure races, as, for instance, that one is Nordic and the other Alpine."

As regards sterilization, Prof. Dahlberg has definite opinions as to its efficacy and argues that it "can never bring about results of great practical value . . . A community may have more or less defective individuals without much harm to it." Moreover, he holds that changes in the distribution of modern population are going on which tend to reduce the proportion of defectives born. If this be so, and the professor would not talk without his book, it should make disturbing reading for Germans, as in their country during the first year after the enactment of the sterilization law fifty-six thousand persons were subjected to treatment.

As for anti-Semitism in Germany, it has been made a matter of politics and on this point Professor Dahlberg says: "From a coldly rational viewpoint the position with reference to anti-Semitism is in one way on all fours with the sterilization issue . . . It may be supposed that such measures lead to a very great reduction of Jewish fertility . . . Anti-Semitism will gradually die for lack of material even if it takes several generations." Criticizing this statement, Sir Arthur Keith remarks that such a conclusion is altogether at variance with what is known to have happened in former times; pogroms and persecutions have always rallied the Jews to new measures of biological endeavor. Numbers are being reduced in Germany but elsewhere there is no lack.

Measures such as are being undertaken in Germany and in those countries which are, to some extent, under German control, whether anti-Semitism or sterilization, in the long run recoil on the people who put them into force. A country which has two codes of morality, one for itself and another for its victims, those in its power, sooner or later finds itself with no code at all.

Professor Dahlberg rejects the claims made by Germans to be *Herrenvolk*. There is none such in Europe: in their genetical equipment the peoples of Europe are all much on the same level.

When all is said and done, who can affirm that mongrel races are not the most efficient? If Germany poses as the one pure race, no country is anxious to be of so pure a race. Putting on one side religion, she has no ethics, that is, no standards of decent behavior. Her policy is based on brute force and dissimulation. However, that is beside the question. *Race, Reason, and Rubbish* shows that in racial characteristics, there is little difference in the peoples of Europe. In some countries too great prosperity has been the bane, while poverty has been the main drawback in other countries. The happy medium is best.

Culture of Needed Drugs

The final solution of the drug shortage problem is to "grow our own". This should not be difficult as almost all medicinal herbs can and do grow in the United States. The most productive source at present, according to *Life*, is the Great Smokies region in the South, where the self-sufficient mountaineer inhabitants know their herbs through their own pharmacopœia of household remedies. With prices rising, back country families are scouring woods, swamps and weed patches to collect over two hundred herbs which they export to the outside world.

That great possibilities exist in the Western Hemisphere for the cultivation of needed drugs, was stated at the Herb Conference held in the New York Botanical Garden. Dr. William J. Bonisteel, professor of botany at Fordham University, said that over fifty countries were cut from our supply list and that as a result we were deprived of over fifty-five percent of our total drug needs, that but only a few drugs, such as belladonna, stramonium, henbane, quinine, agar and nux vomica, were absolutely necessary from the medical point of view. Two thousand acres would supply all the digitalis, stramonium and henbane necessary for this country and our allies, he declared.

Projects are now under way for the extensive cultivation of belladonna. Stramonium, which grows wild in many sections of the country, could be easily collected, if labor were obtainable. Dr. Bonisteel recommended that the Boy and Girl Scouts do this work and sell the drug to buyers, thus avoiding the costly methods involved in extensive cultivation of the plant.

Other necessary drugs include the essential oils used in many industries and insecticidal drugs required for the war food production and to prevent the spread of disease. A large project is being carried out in the marshy swamps of Florida, where thousands of acres have been planted with lemon grass. The oil distilled from the grass is highly important because of its use in a variety of perfume materials. Oil of sweet almond is becoming scarce. A satisfactory substitute has been developed in California, from apricot and peach kernels. Lemon and orange oils are being produced in California and Florida.

Papers and Addresses

STUDIES OF TUBERCULOSIS THERAPY

Methods and Results

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At the outbreak of the World War, in 1914, Professor Levine of the Medical College of the University of Moscow, Russia, who had for some time demonstrated the value of his method of intravenous hypersaturation calcium chloride therapy for all kinds of tuberculous infections, showed me his extensive research work, experimental and clinical, in series, and the results thus far apparent. So remarkable were these results that throughout the war he was placed in charge of many tuberculous soldiers who were suffering from various types and degrees of this infection. Several times during the war, I had the opportunity to visit his wards and review his work and results, which continued to be most remarkable in spite of crowded wards and the stringencies and deprivations of existing war conditions.

These methods and results were later published, and at successive intervals he reported on the continued observation of the patients treated. Soon after the war was over the method was tried in France and the results obtained were published by the military surgeons of the Val de Grace Hospital in Paris, all corroborating the claims and results of Professor Levine, as published in Russian.

In 1923, addressing the Randolph County Medical Society of West Virginia, I called attention to this hypersaturation calcium intravenous therapy of tuberculosis, and shortly thereafter Dr. C. H. Hall, of Elkins, W. Va., came to me for details of the method with which he wished to experiment. I made for him the requisite sterile and molecularly isotonic solution of the calcium chloride. He carried out the treatment in a considerable series of cases of tuberculosis—all forms—at the Davis Memorial Hospital, in Elkins, W. Va., and has for many years continued the treatment at his office and at the homes of patients.

The results in his first series of cases were published in the *Journal of the State Medical Society,* with full details of the method, and later, in the same *Journal,* he published further reports and results. He, as well as myself, frequently demonstrated this therapy to interested physicians, many of whom tried it and reported favorably on its use. However, they failed to continue sending reports on their treated cases, and most of them did not make any written case history from the beginning. When asked about it, they expressed complete satisfaction with the results of the treatment.

Since 1923, I have used this therapy in all of my cases, and have for many years kept in close touch with the cases of Dr. Hall. I have also had occasion to examine some cases of my colleagues, before treatment, and observe them for long periods after treatment. For more than eight years now such control embraces a total of 165 patients. None were treated less than three years ago, and it seems time to study these results.

All patients, regardless of their condition, if not actually moribund, were accepted. Many cases were so far advanced indeed that in twenty percent of the total number, we could offer no hope other than temporary relief and the possible prolongation of life in more comfort. In no case was any disadvantage observed from the treatment. Most patients showed decided improvement, in the lessening of the cough and the amount of sputum, and a decided sense of greater comfort with better sleeping and eating. The advanced condition of the disease in these patients did not permit a sufficiently long survival for recovery of strength and the building up of a real resistance. This fifth of all patients treated were designated as *morituri* on arrival; they were benefited temporarily, rendered much more comfortable, but could never be counted as possible recoveries. They are all dead now.

Perhaps there should be included in the adrenal cases that of a young woman, twenty-two years of age, who showed great lassitude and anorexia, but absolutely no other symptoms. Repeated examinations by competent diagnosticians and clinical laboratories at Louisville, Ky., as well as my own, failed to disclose the presence of any organic, systemic, or specific pathology. The patient was referred to me from Ashland, Ky., on the ground that possibly incipient military tuberculosis existed. The family history was completely negative; but the patient gave a positive reaction to the tuberculin test (cutaneous and nasal turbinate). Upon request, the intravenous therapy of hypercalcium was given to her, and repeated three months later, in spite of the fact that there was absolutely no reaction from this treatment. Nothing but an increasing and uncheckable asthenia was ever noted in this case, which terminated fatally within the year. In spite of the efforts of her physician, at Ashland, no autopsy was obtainable; consequently, no cause of death was determined. This was possibly a case of acute but latent tuberculous involvement and destruction of the suprarenal capsules of the kidneys.

In eighty percent of all patients treated, condition at the time of examination seemed to indicate sufficient survival time for the possible reestablishment of resistance, more than half reported, for periods of from five to ten years after treatment, the reestablishment of their general health and strength sufficient to permit the continuance of their regular occupations, with excellent sleeping and eating, and in general a regain of weight and its subsequent maintenance. All

reports of pulmonary cases were remarkable in stating a marked diminution or cessation of cough and expectoration, permitting quiet nights of sleep and rest. Such of these patients as were repeatedly examined at long intervals after treatment seemed to show contraction of caverns and healing of all open lesions; but lost tissue was not restored, nor were adhesions of long standing absorbed, to any discernible degree, although in some, better chest expansion was claimed.

In forty percent of these patients, nineteen who reported good health and improved condition for some months and years, ceased to report further. Letters, with return addresses, sent to them from time to time, were occasionally answered, but mostly neglected; none were ever returned by the postal authorities as undelivered. I subsequently observed some of these patients in the full activities of life; some have been reported as declaring that they never had tuberculosis. One such patient, a lady prominent in local society is known as being unusually active and healthy now in middle age. She declares that she was never tuberculous; although, in 1925, she was pronounced tuberculous by a prominent Pittsburgh consultant, by the well known Pittsburgh Clinic, and by myself, the two latter, finding positive bacilli in her sputum.

It is natural and even desirable that all such patients come to the conclusion that they do not have and never have had any tuberculous infection whatsoever; and why should the persistence of the physician to show that he was right, come again into their life picture to disturb its harmony. This is a country where the patient always knows better than his physician; so let us join with him in approving his belief.

Of those classed as *morituri*, other than the case of undetermined diagnosis, previously mentioned, four patients, of limited survival, were typical cases of Addison's disease (tuberculous involvement and destruction of the adrenals). They were all young; a girl of eighteen, a man of twenty-four, another girl of twenty-five and a married woman thirty-four years of age. All had been healthy children, and without previous pathology of importance, when the rapidly increasing symptoms of the disease suddenly began.

The married woman showed a decided bronze skin; but complained only of extreme weakness.

The eighteen year old girl showed some darkening grayish patches over the lumbar region, up to the lower apex of the shoulder blades. She had been examined at the Pittsburgh Clinic and by a local physician, Dr. Harvey Powell, who referred her to me, both making a diagnosis of miliary tuberculosis of the lungs. She complained solely of extreme weakness and, except for pronounced asthenia, showed no other symptoms. Nothing could be found in the lungs and breathing that could not be perfectly explained by the asthenia alone. She had a positive cutaneous reaction to tuberculin, but no cough, no temperature (usually subnormal), no pain, and marked anorexia.

The young man had always been in good health, but never rugged; was sedentary in his habits (a bookkeeper by profession) until six months previous to his reference to me by Dr. Fitch, of Fairmont, W. Va., for diagnosis. The patient complained solely of extreme weakness. He presented no other symptoms and there was no clinical evidence of organic pathology, although reacting positively to tuberculin testing. At this time he was practically too weak to remain long out of bed. There was complete anorexia, but the patient was carefully nourished by the insistence of his physician.

The twenty-five year old girl was referred to me by Dr. Offner, of Fairmont, W. Va. She had suffered from pulmonary tuberculosis for one year and at time of examination was almost cachectic; but the marked weakness was indicative of the destruction of the adrenals, and a diagnosis of Addisonian was made in her case.

For all four of these patients the intravenous operations were extremely difficult because of a lack of resistance in the walls of the veins and a lack of distention by any appreciable pressure of blood. In none of them was there the slightest reaction to treatment, and no improvement whatsoever could be detected. Their survivals were short in all cases. It is evident that this treatment is valueless in tuberculosis of the adrenals. It should be noted, however, that in the case of the twenty-five year old girl, cough and expectoration were markedly diminished and to that extent there was relief for her, for the rest of her life.

In nine cases of the series, it was possible to demonstrate the tuberculous involvement of the kidney. Most of these patients were more seriously affected by pulmonary tuberculosis, and it was evident, from the case histories, that in most of them the kidney was secondarily infected. In all cases, where the renal insufficiency was manifest, or a purulent urine was found, it was impossible to administer a full dose (three hundred cc.) of the isotonic calcium solution. Anywhere from half that dose and upwards produced symptoms of distress, usually incipient nausea, weakening of the pulse to a point which indicated the cessation of administering any greater amount of the solution. In many patients there was a marked tendency to sleep immediately after the injection, often preceded by a chill. Consequently all patients were at once covered with a blanket as soon as treated. They often fell asleep immediately, apparently much to their benefit. The sleep symptom was invariable and more prolonged in the renal cases, and sometimes seemed too deep to be called normal.

In all nonrenal cases there was usually a prompt and marked increase in the amount of urine secreted, but not in the renal cases. It was assumed, therefore, that a larger dose of the calcium salt would induce a condition of alkalosis. This occurred in one case of repeated serial injections where the dose required constant diminution with each injection to avoid the alkalosis almost invariably induced, as the renal efficiency diminished with the time between the patient's return for further serial injections. In this case, the treatment always afforded relief and improvement of symptoms, and undoubtedly prolonged the patient's life for three years. The patient, a nineteen year old student, was taken suddenly ill in his freshman year at college. He developed a left tuberculous suppurating epididymitis, which progressed so rapidly that within a year there was a positive (ascending) infection of the left kidney, rapid loss of weight and strength, and discharging freely through several open sinuses of the epididymis. He was sent to me by his physician, with the prognosis, endorsed by a New York specialist, that he could not live a year. He was given three series of injections at

intervals of about six months, and was in fair condition at the end of his last series. For financial reasons, however, he could not make the long journey to come to me, and no local physician was able or willing to undertake the work which could not be paid for, although I offered to furnish the solutions. Deprived of further treatment, which the young man felt sustained him, he lost ground and died soon after, three years from the time of his first treatment. The open lesions healed very promptly with his first series of injections and never showed symptoms of inflamed epididymitis thereafter. It is evident that the treatment rendered his life much more comfortable and also prolonged it, for two years at least. I am convinced that continuance of the treatment in series in this case could have prolonged the patient's life much longer and kept him comfortable.

Many of the patients coming for treatment, had hemoptysis on arrival, or showed such symptoms early in their treatment; but invariably this manifestation ceased entirely as soon as the effects of treatment had had time to become established. In some cases the effect was so efficient and startling as to make the therapy seem specific as a remedy.

One patient, a male, twenty-five years old, for two years a patient in a state sanatorium, was rapidly approaching the end. He was very cachectic and expectorated night and day a large amount of purulent sputum. There were caverns in both lungs, and for some time he had suffered from frequent hemorrhages that were difficult to arrest and extremely exhausting. As a result of the medical report of the institution to his family, an older brother came for him on New Year's day, 1925, to take him home.

The patient had heard of the calcium treatment which had been used for many of the patients of the sanatorium who had left there to go to the Davis Memorial Hospital, then treating a series of such cases, and as a last resort begged his brother to bring him to me, instead of taking him home. They arrived at my office at six o'clock that night. The travel had exhausted the patient and brought on a hemorrhage and almost complete collapse, to such a degree that I put him to bed at once in my emergency room, and, with recuperative care, gave him immediately his first injection of isotonic calcium chloride solution to more than its maximum dose. (He took very slowly for almost three quarters of an hour, five hundred cc. of the solution.) The effect was striking; the hemorrhage stopped at once and the intravenous fluid seemed to restore very efficiently the volume of blood that he had lost. He was able to eat a light supper two hours later and slept well the entire night. This patient was under my close observation for years. He ceased marked coughing before the end of his first series of injections, and from that time had no need for a sputum cup, as he seldom coughed and more rarely expectorated any matter of a purulent nature. In about four months he had recovered sufficient strength to return home and take some light work in a garage at Wheeling, for his support.

A year and a half later, perhaps, he returned to me with a pleurisy, which had been neglected by his local physician, to such a degree that immediately on his arrival I performed an emergency aspiration of his left thorax, estimating that there were almost four litres of fluid there. I withdrew over three litres at the first aspiration, and commenced at once another series of the calcium injections. A second aspiration two weeks later left the thorax without further liquid and no further accumulation there, and on completion of the series of injections the young man was well enough to undertake the duties of office attendant which he carried out, in relative good health, for more than two years, then returning to his garage work in Wheeling. In about six months he was attacked by acute pneumonia of the right lung, and I was called to his home for this emergency, giving him a further series of calcium therapy when he was convalescent from the pneumonia. This treatment seemed a very effective aid in bringing about a quick recovery of strength after the acute illness. For years after that he reported to me, but for some years I have had no word from him.

A youth, nineteen years old, was taken suddenly with uncontrollable hemoptysis for the first time, which so frightened his family that two older brothers brought him to me. They arrived at my office very early in the morning after an automobile ride of over a hundred miles during the night with the patient still losing blood in considerable quantities, and in such a state of fear and exhaustion that he was at once put to bed in the emergency room. He was cared for to prevent collapse, while the solution was being prepared for an immediate injection, which was given within an hour of his arrival. The result was startling. There was complete arrest of hemorrhage immediately, full pulse and color restored, so that nourishment could be given, soon after completing an injection of 350 cc. of the solution, given very slowly in forty minutes of time. The boy fell asleep at once and six hours later awoke in very satisfactory state of strength and spirits. On my assurance, his brothers left for home that day, leaving the youth to complete his full series of fifteen injections, which was done in a month's time and he returned home alone, seeming quite well. He has never reported since that time. He was considered to be a commencing pulmonary tuberculosis, of which the sudden hemorrhage was the first symptom noticed. No previous history was obtainable, except that the mother had died soon after his birth, from pulmonary tuberculosis, after being confined to bed for years.

This marked action in hemoptysis, shown in all of our cases, merits insistence, and seems almost specific.

The practically constant success of injections in arresting the exhausting cough and generally diminishing the amount of sputum so that the use of a sputum cup is no longer needed, and often resulting in the disappearance of sputum that was on arrival abundant, positive and purulent, seems to be a sufficient reason for the use of these injections.

To determine to what degree curative processes are induced, requires carefully devised, long and continuously controlled series of cases, with all the adjuvants of laboratory and clinical examination; x ray serial pictures and postmortems in all fatal cases. All of these things are beyond the scope of this study; but in conclusion, it can be said, without going into the degree of cure or even of its possibility, this treatment has proven markedly successful in restoring a relatively normal, active, and self-supporting life of comfort and joy in home surroundings, and undoubtedly prolongation of life for years to many of the patients treated. Many of

these patients have been active and free from illness for years and consider themselves cured, and in some cases are sure they *never had tuberculosis*.

Conclusion

All of the foregoing results are sufficient reasons for urging resort to such therapy on a far wider scale than seems to have been effected up to the present time. It must be remembered that the proven and amply corroborated results of this treatment have been internationally controlled by established authorities for twenty-five or more years.

There is every reason, in the the treatment of an advanced tuberculosis, to keep medication on simple lines, and in most cases where this intravenous hypersaturation calcium chloride therapy was used, every effort was made to confine all medication to these injections.

The use of calcium gluconate, instead of the chloride, has been tried and seems equally effective, with the advantage of nonirritation of tissues in case of injection leakage of poor technique.

The remarkable efficiency of the sulfa compounds in clearing the blood and tissues from the bacteria, usual in secondary infections of tuberculous lesions, suggests their use internally, carefully supervised by the physician, at the commencement of these serial injections, to hasten the disappearance of purulent sputum and the discharges from suppurating sinuses and abcesses. I have tried sulfathiazole in a few recent cases, and in all this desired healing action seemed much accelerated.

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SOME FACTORS CONCERNING AZOTEMIA IN SURGERY

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Azotemia is a general term used to indicate an elevation of the urea nitrogen of the blood. It may be one of three types:

1. *Prerenal azotemia.*—In this type the rise in blood urea results from causes outside the kidneys and which secondarily may affect the kidneys indirectly.

2. *Renal azotemia.*—In this type the rise in urea is due to primary disease of the kidneys, with an alteration in the kidney structure and a resultant alteration of renal function. This type usually results in the syndrome which has been termed uremia. (A study of the blood creatinine is a better indication of renal impairment than a study of the blood urea in these cases).

3. *Postrenal azotemia.*—This type occurs when, due to some extrinsic factor as, for example, a mechanical blockage to the passage of urine (enlarged prostate), the kidneys cannot carry on their proper function although the renal structures are not primarily altered, but may become secondarily involved.

I. Prerenal Azotemia

Causes.—1. Severe vomiting; especially in intestinal obstruction and pernicious vomiting of pregnancy. 2. Loss of intestinal contents in diarrhea, or, rarely, in a duodenal fistula. This is common in children and rare in adults. 3. Affections of the liver and the biliary passages, as well as traumatic pulpification of the liver, acute liver damage, and in acute exacerbations of chronic liver disease. 4. Diabetes with acidosis (especially when precipitated by infection). 5. Addison's disease. 6. Traumatic shock (the nonprotein nitrogen may rise to considerable heights). 7. Postoperative collapse (surgical shock). 8. Circulatory collapse of pneumonia, diphtheria, sepsis, peritonitis, and other infections. The nonprotein nitrogen may rise to great heights in these cases. 9. Widespread burns resulting in shock. 10. Coronary thrombosis with shock (nonprotein nitrogen may exceed one hundred mgm. percent). 11. Following profuse hemorrhage, especially from the gastrointestinal tract. 12. Terminal stages of heart failure.

Pathogenesis.—Studies of nitrogen excretion in the urine have shown that there is an increased protein destruction in at least many of the conditions leading to prerenal azotemia. Such increased protein destruction must tend to augment the nonprotein nitrogen of the blood when the kidneys are insufficient. But that the increased protein destruction in these conditions is sufficient to produce pronounced azotemia in the presence of unimpaired renal excretion is unlikely.

When kidney function is good, one can administer quantities of urea far greater than those resulting from even very greatly accelerated protein metabolism without producing more than slight increase in the urea content of the blood. Tests of kidney function afford direct evidence of the functional impairment of the kidneys in prerenal azotemia. A fundamental criterion of impairment of renal function is a concentration of the urine disproportionately low in comparison to the volume. Thus, while a specific gravity of 1.020 is evidence of good kidney function when the urinary volume is normal or but little reduced, it is too low if the urinary volume is very small (four hundred cc. or less in twenty-four hours). Such a disproportionately low concentration of the urine is demonstrable in at least the vast majority of instances of prerenal azotemia.

The factors concerned in depressing the kidneys and thus producing prerenal azotemia are:

1. HYPOCHLOREMIA: In the most common forms of prerenal azotemia, the chloride content of the blood is decreased, and the intravenous administration of NaCl (sodium chloride) solution may be followed by a prompt improvement with a fall in the nonprotein nitrogen of the blood.

2. LOW ARTERIAL PRESSURE: This is based on the fact that a fall in general arterial pressure is accompanied by diminished urinary output.

3. ALKALOSIS: That alkalosis may produce azotemia was suggested by observations on patients with peptic ulcer who were receiving large doses of sodium bicarbonate. Examination of the blood reveals alkalosis (increased bicarbonate), azotemia, and hypochloremia. The urine usually contains protein and casts, sometimes red cells are also present. The concentration test reveals impairment of renal function.

II. Renal Uremia (Renal Azotemia)

This form of azotemia is due to disease of the kidneys. Any of the renal diseases may culminate in uremia if so large a proportion of the renal parenchyma is destroyed that the remainder is unable to compensate for it. For uremia to result, however, it is necessary that a very large proportion of the renal parenchyma be damaged and that the remainder unable to compensate. Uremia results only when a very large proportion of the renal parenchyma is functionally incapacitated. Experimentation shows that about one-half to three-fourths of the kidney substance must be removed before retention of urinary constituents results. In chronic renal disease in man an even higher proportion of the renal parenchyma may be destroyed before uremia results; the progress of the injury is so gradual that the organism is able to adapt itself to a greatly diminished number of functioning renal units. In examining the sections of a kidney in chronic glomerulonephritis, one is astounded that life was possible with so little of the kidney able to function. On the other hand, fatal uremia may occur with much less damage to the kidney if the heart has been severely damaged or an intercurrent infection develops. Uremia is usually the fatal picture and final syndrome in the medical diseases of the kidneys.

"Toxic nephritis".—Damage to the kidneys by circulating toxins derived from bacteria or tissue autolysis with resultant "toxic nephritis" has repeatedly been incriminated in cases of: intestinal obstruction, intestinal toxicosis of infants, collapse in acute infections, and liver disease.

III. Postrenal Azotemia

This type is due to obstruction to the outflow of urine. When the obstructing cause is removed, and if the kidney substance has not become secondarily involved, the azotemia clears up. The most common causes of this type of azotemia are: 1, benign or malignant prostatic hypertrophy; 2, renal calculi; 3, tumors of the abdomen or pelvis which by their location can interfere with the passage of urine.

Factors Concerning Azotemia in Surgery

1. Dehydration is one of the most frequent causes of prerenal azotemia. While often associated with excessive vomiting or diarrhea, dehydration may also occur without these symptoms. It has been emphasized that deficiency states occur in gastrointestinal disease due to an inadequate dietetic intake as a result of various digestive symptoms. When patients suffer from abdominal pain or other gastrointestinal symptoms, they are apt to limit not only their food intake but their liquid intake as well. Dehydration also plays an important part in the development of postoperative azotemia.

2. In patients with severe enterocolitis, an elevation in the nonprotein nitrogen levels has been observed.

3. In patients who are to be operated upon for biliary disease, another factor, in addition to the water balance, must be taken into account, namely, the glycogen saturation of the liver. Very often, when gallbladder disease has been of long standing, there is an associated latent hepatitis that cannot be detected clinically or at operation. This latent hepatitis may be the cause of postoperative azotemia. Therefore, a safe rule to follow before gallbladder operations is to give carbohydrates liberally by mouth and parenterally.

4. The importance of the syndrome of increased blood urea in cases of bleeding peptic ulcer has been discussed very often. By experiments in dogs whole beef blood was administered by stomach tube in large single and divided doses. A maximum blood urea nitrogen concentration was attained in all cases in from five to nineteen hours, depending upon the amount of blood given and the dosage. The return of blood urea nitrogen to normal limits occurred in from six to seventeen hours following last administration of blood.

5. There are other states of nonrenal azotemia that are not conditioned by loss of water or electrolytes. There is a possibility that such a state may reflect some internal metabolic derangement which at present is not readily understood. Thus the injection of histamine into animals produces an increase in the nitrogen of the plasma and a decrease in the chlorides. The similarity, both chemical and clinical, between the hypochloremic states and the crises of Addison's disease has been mentioned by Wohl, and others. The report of Harrop on the salt-water hormone of the adrenals is provocative of the thought that a functional and temporary derangement of the adrenals may be associated fundamentally with some states of nonnephritic urea increase. This state eventuates from fluid and base alterations between the extracellular tissues, the tissue cells, and the blood.

Azotemia and Hemorrhage

Alimentary azotemia.—The word azotemia means the increase of urea or other nitrogenous bodies in the blood. Reasoning from analogy to the commonly used term "alimentary glycosuria", it seemed logical to certain investigators that the urea syndrome be termed "alimentary azotemia". The mechanism in each case is the same and the adjective is used in both instances to differentiate the condition under consideration from a similar one in result but a different one in causation. Alimentary azotemia occurs in cases of massive hemorrhage into the intestinal tract. This most often occurs from a bleeding peptic ulcer, according to some investigators. The degree of the azotemia is of some prognostic value, high blood urea nitrogen values being associated with high mortality. This is probably because the increase in blood urea nitrogen is a measure of the amount of blood lost. The increase in urea is due to the absorption of digested blood, and therefore the term "alimentary azotemia" is not a misnomer. The increase is mainly due to the erythrocyte fraction of blood (and in particular to its contained hemoglobin), while the fraction of plasma plays a distinctly secondary rôle. Alimentary azotemia can be defined, therefore, as an azotemia due to absorption of digested hemoglobin from the alimentary tract.

The azotemia declines rapidly on the cessation of bleeding. The mechanism is the absorption of blood proteins from the digestive tract. In a study of twenty cases of ruptured ectopic pregnancy, no elevation of urea was noted. It would seem, therefore, that the azotemia of hemorrhage is probably not conditioned by the resorption of blood. The loss of plasma and electrolytes through the intestinal tract would appear to be the more correct explanation. Europeans refer to azotemia from hemorrhage as "exhaustio virium".

If it is unrecognized and not treated by sufficient amounts of sodium chloride solution, the patient usually dies. Death in such instances is held to be due to extrarenal uremia rather than to severe anemia.

Voron and associates followed the progress of an abortion case with marked azotemia and jaundice. They concluded the urea level of the blood was not a reliable measure of prognosis. Not in keeping with this thought Chunn and Harkins stated that the highest urea values associated with gastrointestinal hemorrhage were compatible with the highest mortality. These conclusions were substantiated by animal experimentation. Johnson differed from this opinion. He states that the pathogenesis of the azotemia depends on the rate of urea formation which is in excess of the rate at which urea can be excreted by the kidneys. His observations and investigations have lead him to believe that there is no definite correlation between the degree of azotemia and the prognosis for recovery. "The absence of azotemia in some patients with massive hemorrhage into the upper portion of the gastrointestinal tract may be explained by the presence of normal renal function. In them the rate at which urea is excreted quickly equals the increased rate of urea production." This observation is a sound hypothesis.

Conclusions

Although in emergencies of hemorrhagic origin kidney function cannot be considered, nevertheless, the factors presented above should indicate the importance of knowing the renal functional capacity. In the preoperative care of the patient, adequate kidney studies are often forgotten. Simple procedures such as the concentration and dilution test, or the phenolsulfonphthalein test can be of inestimable value as indicators of renal damage. By judicious preoperative water balance, and an adequate administration of glucose (especially in biliary disease), the operability of the patient can be calibrated. Thus many postoperative renal complications can be anticipated, and possibly avoided.

It was the purpose of this article to present the concept of azotemia according to Fishberg. With this knowledge as a background, recent observations on the subject, with special reference to surgery, have been presented. In this way, it is hoped, a clearer clinico-chemical interpretation of blood chemistry reports can be visualized. Thus the value of kidney function will be brought to the attention of the surgeon with a resultant benefit to the patient.

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CHRONIC MALARIA*

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E. G. H., aged forty-four, was admitted to this hospital with influenza at 9:15 a.m. on April 10, 1942, complaining of chills, fever, and muscular aches. His temperature was 100.2°, pulse 108, and respiration 20. He had reported here for duty from a hospital in the Northwest where he had been hospitalized several weeks for influenza.

The next morning he was seen in consultation. Because of chills, fever, and sweating and his accent, he was asked, "From what part of the South do you come?" He answered, "Awkinsaw." Then, "Have you ever had ague?" "Yes, sir, many times." What cured you?" "Quinine!"

His white blood-count was slightly below normal. He also had an enlarged tender spleen which made the diagnosis of an acute exacerbation of chronic malaria more than a guess. So quinine sulphate, fifteen grains, three times a day was administered—the therapeutic test. This, in spite of the fact that plasmodia were not found in the blood. Three days later, he was discharged to our Out-Patient Department, where he was continued on quinine, five grains, three times a day. He has been back on duty for over a month.

On account of the generalized apathy and disinterest among the natives in this vicinity, even among some of our own medical officers, concerning the eradication of the mosquito in this neck of the woods, this malarial patient was presented, in order to put us on the alert against this disease. Mosquitoes have been caught here in the last month, and identified as transmitters of the disease, once infection is present in human hosts.

Chronic recurring malaria is very hard to diagnose. It is frequently confused with influenza and typhoid, since it causes inflammation of such internal organs as the brain, heart, lungs, spleen and liver. Its most common case is the estivoautumnal parasite (Plasmodium falciparum). Its onset is gradual, as in typhoid, and chilling is often a minor complaint. The sufferer has generalized aching, similar to influenza and like syphilis, the great actor, it can mimic many maladies, and unless one is on the alert, he can easily be fooled.

In epidemic regions, the inhabitants, especially children, frequently show plasmodia in their blood, although definite symptoms of malaria may be absent. These "carriers" are of the greatest importance in the transmission of malaria, and in them the disease is said to be "latent." If laboratory identification of the parasite is not successful, the therapeutic test, quinine, should be used. If the fever does not disappear with quinine, it is not malaria.

*Case reported at a staff meeting at a U. S. Army hospital.

Symposium on Neuropsychiatry

MEDICAL RECORD

PUBLISHED MONTHLY BY

THE MEDICAL JOURNAL AND RECORD PUBLISHING CO., INC.

AUGUST 1942

ADMINISTRATIVE PROBLEMS IN A MENTAL HOSPITAL

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The administrator of a mental hospital, in the course of his daily work, meets problems that rarely, if ever, appear in a general hospital. As a heritage of the days of Kirkbride, when the superintendent made rounds daily and supervised all treatment, he is expected, along with many other things, to know each patient and his condition, the state of his institution, the prospects and future of both. He has a grave legal responsibility for patients committed to his care. Because the average mental patient is in the hospital a comparatively long time, the superintendent comes to be regarded in a special light by visitors as a person whom they can turn to—or against—when in trouble. The demands on the superintendent are heavy and consume time that, unless profitably spent, could better be devoted to more technical aspects of administration. It is reasonable that assistants be used where practicable. The efficacy of such an arrangement depends on the latters' ability to deal with people and situations, tact, foresight, clarity in thinking and their development in the light of experience.

Probably the most frequently recurring question has to do with the mental and physical condition of the patient. Here the ward physician (who should have the most recent knowledge, due to his close personal contact) serves best. The practice of having the relative deal directly with the ward physician, encouraging to the visitor and stimulating to the doctor, is worth fostering. In this connection, for the value the doctor derives and the soundness of the rapport that may follow, should be mentioned the advisability of having the doctor obtain the history rather than leaving this up to an historian.

Resentment on the part of visitors means considerable time spent on pacifying measures. While many causes for resentment are possible and some are reasonable, from time to time this attitude appears to depend not so much on acts of omission or commission on the part of the hospital, as on badly handled guilt feelings on the part of the relatives, expressed towards the hospital, which serves as a scapegoat. Also, there may be an element of misunderstanding present, as seen where relatives have been misinformed by the referring physician or are unfamiliar with the terms of commitment. This can place the hospital in an embarrassing position and magnify the problem of treating the patient and his relatives.

This last point merits special consideration. Note that the idea of "treating" the patient's relatives is used. They are seldom prepared for the bewilderment, frustration and confusion that attend the admission of a patient to a mental hospital. They experience varying degrees of anger, anxiety, concern, despair and shame, at times to such an extent as to constitute, in effect, a mild emotional disturbance, so that they themselves would be helped by timely guidance. The experienced administrator, wisely applying his psychotherapy, can do much to relieve them and to make future contacts of patients and their relatives with the administrators of the hospital, both pleasant and agreeable.

Ordinarily speaking, the patient who goes to a general hospital presents to his family and friends some objective and easily understood disorder. The thought uppermost in their minds, if the patient's condition is extreme, is apt to be, "Is he going to die?" Their sympathy is elicited; they show their alarm in a way in which the community hastens to approve. On the other hand, the mental patient is likely to enter the hospital with a much more vague disorder—a sexual aberration, delirium tremens (an unhappy incident in the course of an otherwise uneventful life, in the average relative's mind) or a slow and insidiously-developing personality change. Relatives may have trouble in understanding the necessity for hospitalization, where the patient seems so well and the reason for admission so obscure. They are likely to respond with disapproval and condemnation of a social system that permits involuntary institutionalization. Further, when treatment is instituted on a basis of nondramatic confidential interviews, where progress is slow and not marked by the brilliance of a tangible procedure such as delivery, operation or even an autopsy, confidence and understanding may falter.

Often annoying and sometimes definitely disturbing to the administrator are those occasions when he has to act as arbiter in difficulties between patient and relatives, or, even worse, between groups of relatives. Usually, he finds himself unhappily precipitated into a situation where he has to solve family quarrels or to ask for favors in behalf of the patient where none are

likely to be forthcoming. Fortunately, one successful culmination is likely to offset a number of harrowing experiences. When the administrator has to exercise his veto power—and surprisingly often he has to deny unreasonable requests—then relatives are prejudiced and the relationship suffers. Experience shows that those who demand the most, give the least cooperation and criticize most frequently.

An interesting situation which occurs frequently is the disagreement that arises because relatives underestimate and undervaluate the patient's condition. Against the observation of doctors and nurses who see the patient constantly, they match their brief contact of a walk, a ride or a day or week-end at home, to say that he is well, that he seems perfectly normal. Relatives find in patients those healthy elements they want to see; are not psychiatrically minded and so disregard significant signs and symptoms and give undue weight to the patient's protests that he has recovered. Relatives make requests for privileges beyond the capacity of the patient, such as discharge from the hospital at an early date when full stability has not been obtained and the danger of a relapse is all too likely.

Some patients, it is true, can maintain themselves on relatively high levels of good conduct for a period of time, as when under pressure, but back in the hospital, with the pressure lifted, return to their earlier level. This presents two totally different sides to the two most interested parties. Relatives deliberately avoid discussions on, to them, painful subjects; yet these might be the very things the psychiatrist would prefer to emphasize, even in the face of a possible difficult abreaction and sometimes for the therapeutic effect. Naturally, avoidance of emotionally-conditioned subjects places the patient in the best possible light, misleads his relatives and gives a false impression of his adjustment. With relatives gradually becoming increasingly noncooperative, the problem of management is increased.

The diversity of problems that arise does much to keep the administrator's life moving fast and for the most part, sparkling. Specific examples are not mentioned because, on the one hand, they abound and on the other, are rarely twice the same. Smoothness of professional life can be an index of a well organized institution, or, unhappily, of one that is stagnant. The few problems herein presented by no means represent the bulk of the problems which have to be solved, but are some of the more common pressing ones.

FOXBORO STATE HOSPITAL

PHYSICAL FACTORS FOUND IN THE PSYCHOTIC STATES

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This brief report is made of the chief physical factors found in the psychotic states of dementia precox, manic-depressive and involutional insanity (seventy percent of the total of all the psychoses), after twenty years of careful research following the lead made by Dr. Henry A. Cotton, superintendent of Trenton State Hospital, Trenton, N. J., and reported in his book, *Defective and Delinquent Insane* (Princeton Press, 1921), in the hope that it may shed a little more light upon the etiology of the psychoses.

Physical Findings in One Thousand Psychotics

Cerebrospinal fluid.—The most important and distinctive physical factor found in one thousand cases is the abnormal amount of cerebrospinal fluid as denoted by its increased pressure. The normal pressure of this fluid, in the upright position, is from eight to twelve mm. (mercury manometer). In these psychotics the pressure varied from thirty to fifty mm. The normal rate of flow of the fluid from a No. 18 spinal puncture needle is from twenty to thirty drops per minute. In these psychotics the rate of flow varied from 450 to 900 drops per minute. (Rate of flow is determined by measuring the number of cubic centimeters in thirty seconds, doubling and multiplying by fifteen to determine number of drops in one minute.) The amount withdrawn varied from 60 to 210 cc., average 100 cc. Fluid was always replaced with sixty percent of air.

All ordinary laboratory tests on cerebrospinal fluid were negative; that is, the fluid had a normal cell count, negative globulin, and negative Kahn and Wassermann tests. Tests for proteins and chlorides should have been made in the light of the more recent work by a Harvard group reporting on acute meningisms. After the spinal drain the patient is placed in bed for forty-eight hours, and kept flat on his back with the foot of the bed elevated for twelve hours. Headache lasts about twenty-five minutes depending upon the amount of sedative given before draining, and its absorption after fluid pressure is removed allowing a freer blood supply to the cortex. An immediate change in the mental picture is noted. Starting within seventy-two hours after the spinal drain, such measures as glucose or magnesium sulphate, intravenously, were started to keep the cerebrospinal fluid pressure reduced while other physical factors found were remedied. In fifty percent of cases only one such spinal drain is needed; in the other fifty percent, a second one is indicated within six weeks.

Teeth.—In the complete physical examination preceding any treatment, the teeth are carefully x rayed. All known infected, devitalized or impacted teeth are removed as quickly as is compatible with the general resistance of the patient. Usually two to four teeth are extracted at one time, with sittings from five to seven days apart. Always note the reaction about forty-eight hours after each extraction. This can be ameliorated by giving glucose or magnesium sulphate twenty-four hours after extraction. In some fifty cases out of the total one thousand, teeth shown to be negative by x rays were found to be infected by the streptococcus when culture tests were made on the extracted tooth.

Tonsils.—Known infected tonsils should be later removed. They are not a very important factor among physical findings, but must not be overlooked.

Sinuses.—Occasionally sinusitis is suspected. No operative procedures have been employed as the sinusitis usually clears up with the clearing of the colon.

Colon.—Invariably the colon is found to be lazy. Barium meal takes from seventy-two to three hundred hours to pass. The fluoroscope shows patches of barium held up in folds of the colon after the use of the most drastic cathartics. Mucus is found in high colonic irrigation. Cotton found ulcerated area in the bottom of a pocket and the streptococcus in the lymphatics of the mesentery in cases where he had performed a total colectomy. A proper diet, cholagogues, alkaline hydragogues and regular high colonic irrigations help to reform the colon and eliminate that source of infection. Likewise, the patient becomes colon conscious thus reducing to the minimum the likelihood of a second infection from this source.

General resistance.—As a rule, the general resistance of these patients is not very good, with some notable exceptions, however. The usual tonics, and any other specific medication as indicated by the blood chemistry examinations, are indicated. Blood calcium may often be found to be low, while the nonprotein nitrogen is high. Blood sugar findings are not a great factor as they are usually within normal limits.

These are the main physical findings in one thousand psychotics in the classifications of dementia precox, manic-depressive and involutional insanities. They are about equally distributed through these three conditions, and almost invariably found in every case examined and treated.

With the facts enumerated above each one is permitted to build his own theory, but it is highly important that the facts precede the theory else we can get into serious trouble, as we have in the past, by starting with a theory and then finding facts to bolster up that theory.

Theory as to Cause of Psychosis

After twenty years of constant application to this research work, and having found that these facts exist, it is my theory that the immediate cause of the psychosis is the abnormal amount of cerebrospinal fluid within the skull that squeezes the brain and thus interferes materially with its normal blood supply. This pressure and the lessened blood supply to the cortex, I believe, act in the same fashion as does the "wet brain" found in delirium tremens, or the meningism found associated with mass infections about the face or head or in the first stages of pneumonia. The nerve supply conveying the five special senses is interfered with, causing hallucinations to occur, which, in the reasoning sphere, are the cause of delusions. Judgment and power of decision are dependent upon normal ideation and reasoning. I believe that a psychosis is but a prolonged delirium.

Now why does the cerebrospinal fluid accumulate in such excess amount? I do not know. My theory is that, according to the work of Weed, some chemical change occurs in the fluid which makes it difficult to escape from the skull by osmosis through the pacchionian bodies on the under surface of the superior longitudinal sinus. We know that the fluid may be increased in amount from many sources, such as the excess use of alcohol, advanced nephritis, trauma to the skull, brain tumors, massive infections about the face, first stages of pneumonia, etc., but these causes are usually not present in the psychotic. The only infection that is constantly found with these psychotics is a type of the streptococcus, which Rosenow of the Mayo Foundation named the neurotrophic type. This type of the streptococcus is peculiar because it can be present in the body without giving rise to alarm; that is, the white cell count of the blood is about normal, there is no fever or other bad feeling that would direct the attention of either the patient or the physician to its presence. Can it be possible that this infection in some manner or other so changes the chemistry of the spinal fluid as to make it impossible to escape normally from the skull and thus build up the pressure that is found and interferes with the normal operation of the mind in this delirium? This is my theory; what is yours?

I only know that when a patient who suffers from a psychosis, other than paresis or senility, or one who suffers from a psychoneurosis, is treated as outlined above, he has an eighty-five percent chance of recovery within a period of ninety days, providing the treatments are carried out simultaneously and under control. That percentage of recovery is more than double the percentage found in any place where such physical factors are ignored in the treatment.

Summary

It is hoped that the findings of Dr. Henry A. Cotton may be given more serious consideration at this time so that more mentally sick people may recover and thus reduce the terribly overcrowded conditions existing in our state and government hospitals caring for the insane.

Treatment of Physical Factors in Psychoses

Although it is considered bad form to go too much into detail in a treatment schedule because it tends to insult the ego of the physician, the treatment worked out by the old "trial and error" method in this research work over these twenty years might be pardoned by one who is interested.

The cardinal points I have tried to keep in mind in every case are as follows: 1, the meningism or abnormal amount of cerebrospinal fluid; 2, the possibilities of constant infection from a badly crippled colon; 3, the possibilities of the infection from the teeth or tonsils; 4, the general resistance of the patient. With these points constantly in mind the treatment is started after the most careful physical examination and the necessary laboratory work, and the mental state of the patient is used merely as a guide as to how effective the treatment has been in relieving the factors concerned in producing the mental abnormality.

All known abnormal physical factors are tackled simultaneously so that the average treatment schedule is a rather busy one. A therapy chart is prepared for each case, outlining the treatments for a period of thirty days in advance, and as each treatment is given it is checked off the chart and recorded in another treatment history of the patient. This method prevents the possibility of error upon the part of the nurse and gives a straight, connected line of approach that is not dependent upon varying symptomatology from day to day, but which can be corrected at any time deemed advisable. At the end of the month a new treatment schedule is written for the patient according to what seems to be the best, judging from the improvement, if any, upon the part of the patient.

1. *Meningism.*—If the patient is greatly disturbed a spinal drain is made at once. The same technique is employed here as is used by technicians making an encephalogram. An average of one hundred cc. of fluid is removed and replaced with sixty cc. of air, the patient remaining in a recumbent position for forty-eight hours. Following this the patient is given fifty cc. of a fifty percent solution of glucose intravenously, or twenty cc. of a ten percent solution of magnesium sulphate intravenously, once or twice a week for at least six weeks or longer, depending upon the evidence of increase in cerebrospinal fluid pressure.

2. *Colon.*—The high colonic irrigation is started forty-eight hours after the drain. From five to ten gallons of overall solution is used on the constant return system. The mucus in the return tube is used as the best index as to when these irrigations should be placed farther apart. Usually six to eight weeks, at the rate of three per week, would be required to obtain a lessened amount of mucus. The diet should be autotoxic and the proteins and carbohydrates separated in any given meal. Cholagogues should be given at ten day intervals, and saline cathartics at least twice a week. Alkalinization is insisted upon.

3. *Teeth and tonsils.*—X rays of teeth are made in all cases, including patients who are edentulous, for possible unerupted teeth. All known infected, impacted, and devitalized teeth are extracted as fast as is advisable. Keep in mind the fact that teeth which are x ray negative *might* prove to be infected, as a guide to further therapy, if the case does not clear up as soon as was expected. If in doubt, an exploratory extraction with a culture may help. Tonsils can be taken care of later, say in thirty days, if known to be infected.

4. *General resistance.*—Tonics of known worth are given at least three times a week. A foreign protein, *after* all known infected teeth have been removed, is advisable. Typhoid is safe and its action in obtaining a fairly uniform temperature of 102° and a leucocytosis. It likewise seems to help reduce cerebrospinal fluid pressure. It can be repeated every two to seven days as indicated. The usual first dose is fifty million, the second, one hundred million. Regulate the dose by the fever reaction. It is the theory that the fever helps to eliminate the circulating streptococcus. Machine fever therapy, however, is not advisable in these cases with cerebrospinal pressure. There seems to be some break in the brain pulse-fever ratio center. Other intravenous therapy may be used as indicated by blood chemistry, such as a calcium deficiency. Iodides and salicylates are good general eliminants.

Vitamins should be considered. They will not do any harm even if they do no good. Likewise the ovarian preparations in the involutional melancholia cases can be given if one would like to make his therapy complete, but it has been my experience that patients in this classification get along about as well without these preparations as with them. Hydrotherapy is always advisable because it greatly assists in skin elimination and both internal and external hydrotherapy should be employed. Occupational therapy is likewise of value in trying to keep the mind of the patient, as he recovers, interested in something constructive. The hardest job in the world is that of doing nothing.

The psychological environment of these patients has been merely that given to any delirious patient. No special form of psychological approach has been used, such as psychoanalysis as taught by the Freudian school, nor has there been employed any operative procedures, such as described by those who favor the prefrontal lobotomy. No form of "shock" therapy has been used, either that produced by metrazol or insulin or electrically.

A daily chart is kept of each case, detailing the types of therapy used; the conduct of the patient and the general situation are summarized each week. Experience has taught that those who are to recover will show improvement within the first sixty days; those that do not show improvement within ninety days will probably never improve and this heavy treatment is discontinued.

Report of a Case of Dementia Precox

The patient, W. Z., a woman aged twenty-three, was referred by Dr. S. J. W. The duration of her illness was six months. She had been treated from February 11, 1935 to May 25, 1935, and pronounced cured.

This young woman had just completed her course of training and had graduated as a registered nurse. Her parents and instructors stated they had noticed some symptoms of the disease for one year prior to her graduation. Soon after graduation her condition became much worse, with the usual symptoms of dementia precox. She remained at home in bed for six months, with marked negativism, delusions of persecution, introversion, and general loss of interest in her environment. She was given "sedation" and "advice". Her parents had been advised repeatedly to have her sent to the state hospital. They refused to do so on account of the stigma, and she was brought under the above outlined treatment in a private nursing home on Feb. 11, 1935.

Her spinal fluid pressure was very high (forty mm. mercury manometer) and one hundred cc. were withdrawn, and replaced by sixty cc. of air. She improved slightly but within four weeks was as disturbed as at first. Then x rays were made of her teeth and four impacted third molars discovered. These were removed on March 22nd under a general anesthetic. Her condition then became even worse and the glucose and magnesium sulphate intravenously were not enough to keep the cerebrospinal fluid pressure down, so that on April 15th the second spinal drain was performed. Following that her improvement and final recovery were very rapid. She was discharged on May 25, 1935. After a three months rest period at home she accepted a nursing position in a Chicago hospital and within two and one-half years was promoted to the position of Nurse Supervisor. Today, seven years later, she is a First Lieutenant in the U. S. Army Nursing Corps doing her bit in this war.

Summary

The actual treatment of the many physical factors found in the psychotic states requires a rather full schedule and for a period of time of at least ninety days. Short cuts in the therapy only result in a lessened recovery rate. All treatments should be carried out simultaneously. The results are the highest ever reported in the treatment of psychotics. The treatment can be carried out by any physician if he will but take the interest and the time.

730 NORTH BROADWAY

EXTRADURAL HEMORRHAGE*

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The periodical review of the literature and case presentations of extradural hemorrhage are indicated since this condition continues to be one of the most difficult to diagnose and also continues to claim the highest mortality in the group of craniocerebral injuries. On the diagnostic side, the classical picture of unconsciousness, lucid interval and secondary unconsciousness with a dilated fixed pupil and hemiplegia does not always occur. The absence of this sequence, particularly the ideal history, causes many cases to pass undiagnosed until death. The mortality has been somewhat reduced in hospitals that have complete neurological units. The death rate in the case reports of McKenzie (1) and of Munro and Maltby (2) is fifty and fifty-nine percent, respectively, and each author states it should have been lower. In hospital units not well equipped for neurological work, and more so outside of hospitals, the diagnostic errors and the mortality have been, without a doubt, exceedingly high. More frequent and earlier diagnosis can be obtained as the anatomicopathological facts and the various ways in which the condition may appear clinically are spread more and more among the medical profession in general. The collective experiences of all are necessary since extradural hemorrhage is not of frequent occurrence. McKenzie collected twenty cases in ten years, or an average of two yearly, and this infrequency represents the average in most hospitals. Although reports based on five or ten year collections are of much value, more frequent reports, even though they may consist of fewer cases, are necessary to attract more attention toward the recognition of extradural hemorrhage.

Definition

Extradural hemorrhage means bleeding between the inner table of the skull and the external layer of the dura. Trauma is the cause unless otherwise specified. Other terms, such as epidural, supradural and middle meningeal, have the same meaning. In the majority of instances the hemorrhage arises from a lacerated middle meningeal vessel, artery or vein. On infrequent occasions the source may be from one of the craniovenous sinuses, particularly the lateral sinus. In the latter instance, the clinical picture may simulate middle meningeal bleeding and this is shown by Voris (3) in his case report. However, inasmuch as the middle meningeal vessel is the most frequent source of extradural bleeding following trauma, it will be used as the pattern for this paper.

Anatomy

As one views a dried skull split in half, a very clear and beautiful view of the grooves for the middle meningeal vessels is seen. The principal groove begins at the foramen spinosum at the base of the skull and runs for about three cm. in the great wing of the sphenoid before dividing into a larger anterior and a smaller posterior branch. The dividing point corresponds externally to a point on the upper margin of the zygomatic arch about midway between the margin of the orbit and the acoustic meatus. The anterior groove for the anterior branch extends to the anteroinferior angle of the parietal bone opposite the pterion. (At this point the vessels are deeply grooved and are most liable to injury.) The groove then extends upward and backward and branches over the parietal bone, the main branch taking a line toward the top of the skull midway between the nasion and the inion. The posterior groove, for the posterior meningeal vessels, follows a backward and upward direction across the squamous temporal on to the parietal bone, branches in its course, the chief branch following a line toward the lambda. It is thus clear from the close relationship of the meningeal vessels to the grooves described and from the known brittleness of the inner skull table, particularly at the base, why the middle meningeal vessels are very liable to laceration in head injuries. The relationship of the structures from within outward is artery, vein and groove, the vein being in close relation to the grooved inner table.

Pathology and Clinical Pathology

In most cases a fracture of the skull is present and it is demonstrated by the x ray plate, at operation, and in some cases not until necropsy is performed. Munro and Maltby in their series of forty-four cases show the finding of fracture in thirty-four cases and no finding of fracture in ten instances investigated at operation or autopsy. In cases where no fracture exists, I believe the sudden release of the dura from the skull causes the vessel to rupture. The dura separates from the skull after a blow to the head and Verbrugghen's (4) review of the work of Sir Charles Bell shows conclusively that the dura is shaken from the skull below the point struck. The bleeding from the middle meningeal vessel deposits in the newly formed extradural space and the amount of hemorrhage depends on further dural separation or resistance. In addition, the venous or arterial character of the bleeding may also be a factor that determines the degree of hemorrhage.

The brain is compressed by the blood clot, the bleeding from the anterior branch of the middle meningeal overlying the motor area, and the posterior branch overlying the sensory area. However, the hemorrhage from the anterior or the posterior vessel may be so massive that the clot may extend over large areas of the brain.

Accompanying the extradural bleeding, there is a concussion, edema or contusion of the brain depending on the severity of the trauma. The brain injury rather than the lacerated vessel bleeding accounts for the immediate reaction of the dazed or unconscious state. Concussion may be so slight that the history is never received. Recovery from the first unconscious state occurs as soon as the cerebral concussion clears and a lucid interval exists until the increasing extradural bleeding compresses the brain sufficiently to produce the second unconscious state. When, in addition to concussion, there is a severe edema or contusion of the brain, recovery of consciousness is delayed so as to prevent a lucid state. In such cases the extradural

*From the neuropsychiatric service of Lenox Hill Hospital.

bleeding has the opportunity to accumulate a clot large enough to cause a continuance of the coma. The size and the location of the clot are factors that contribute to the amount of compression of the intracranial structures. Occasionally, the presence of a congenitally weak vessel or of pretraumatic vascular disease is the cause of a vessel rupture from mild injury.

The spinal fluid may be either bloody or clear. Bloody fluid is associated with a contused or lacerated brain. Blood obtained by trauma through the lumbar puncture needle can be differentiated from true subarachnoid bleeding. In the former there is a colorless and clear supernatant fluid after spontaneous settling or centrifuging of the fluid in the test tube, whereas in the latter a pink or xanthochromic fluid presents itself. The spinal fluid pressure may be high and yet be masked by a low reading when it is complicated by surgical shock or dehydration. Such factors are important in the evaluation of the true pressure.

Clinical Classification and Symptoms

The following classification embraces most of the cases encountered clinically and its principal purpose is to indicate that the thought of extradural hemorrhage should not be limited to the classical history.

1. After a head injury there is sudden unconsciousness followed by recovery to a lucid state usually lasting from hours to two or three days, and then a relapse into unconsciousness ensues. This sequence is the classical one found in most textbooks, but it does not always occur. McKenzie emphasized the lucid interval in his report, but it is interesting to note that Munro and Maltby found that the majority of their cases had no lucid interval. However, when a lucid interval is obtained by history or by observation, it is highly important.

2. After a head injury there is no unconsciousness, the patient complains of no symptoms or of a momentary dazed or fleeting dizzy sensation, resumes the routine daily activity and then in a short period of time gradually proceeds into an unconscious state.

3. After a head injury there is a sudden semiconsciousness or unconscious state maintained and the condition progresses with or without the addition of focal signs.

When the extradural clot expands sufficiently to compress the cerebral structures, a unilateral dilated fixed pupil, monoplegia, hemiplegia and facial paralysis are the most important signs. Any of these signs associated with one of the above classified groups is very significant. The unilateral fixed and dilated pupil (Hutchinson) in the majority of instances indicates the side of the lesion and is commonly produced by cerebral displacement causing stretching and pressure of the third nerve. McKenzie clearly illustrates this and other less common mechanisms that produce the Hutchinson pupil. In a third nerve lesion the pupil is fixed to both direct and consensual light; whereas if the pupil is fixed to direct light alone, it is then due to an optic nerve lesion. The hemiplegia usually occurs on the side opposite that of the cerebral involvement, rarely may occur on the hemolateral side. The latter is produced when there is displacement of the mesencephalon and pressure or contusion of the opposite cerebral peduncle against the sharp free edge of the tentorium cerebelli. Facial paralysis is infrequently mentioned by most writers but is emphasized by Munro and Maltby in their report. To demonstrate weakness or paralysis of the extremities or face in the unconscious patient, pin prick or deep supraorbital pressure frequently reveals impaired withdrawal motion on the weak or paralyzed side. One or more of the above signs may be present when the patient is first examined or may develop under medical observation.

Diagnosis

A satisfactory history is often not obtainable. When the history is good in details and indicates a progressive course to coma after a brief unimpaired conscious state following the trauma, it warrants a suspicion of extradural hemorrhage. A history that indicates a progressive march to unconsciousness is just as important as one that has the classical lucid interval in addition. The lucid interval is usually a matter of hours, but has been reported as long as twenty-one days by McKenzie. The appearance of focal signs, especially under observation, convert a suspicion of diagnosis into a fact in the majority of cases. The x ray investigation for skull fracture is of secondary rather than of primary importance for, as a rule, the history and clinical signs are the most important criteria. When the skull reveals no fracture by radiography, the diagnosis is not ruled out. However, the x ray demonstration of a fracture crossing one of the middle meningeal grooves may have its place of importance in a case in which the sudden unconsciousness following a head injury is maintained and no focal signs are present. In such a case, the x ray finding is very valuable for diagnosis since contributory signs and history are lacking.

The spinal fluid offers the least important facts. Typically, it presents a high pressure and the fluid is clear and colorless. However, this picture cannot be relied upon. Shock and dehydration may cause a deceptive low pressure and concomitant brain injury may cause the spinal fluid to be xanthochromic or bloody. When a lumbar puncture is done, it is best to remove the smallest amount of fluid that is necessary for manometric reading, for study of physical characteristics and for any indicated test. If a small quantity of fluid is withdrawn, there is less possibility of increasing the extradural bleeding from diminishing the pressure of the brain against the dura. Differential diagnosis from laceration of the brain, intracerebral hemorrhage and subdural hemorrhage is at times impossible. Whenever there is a founded suspicion of the presence of extradural hemorrhage, it is always best to perform diagnostic trephination which will prove life saving if positive, and harmless if negative.

Prognosis

The prognosis depends on several factors. In order they are the health of the patient before the accident, the amount of accompanying injury of the brain or of other parts of the body, early consideration of the diagnosis, early operative measures and post operative care. Without operation, the patient has no chance to survive.

Treatment

Operation is indicated at the moment the diagnosis is made. The clot is removed and the bleeding point is controlled. The details of operation can be found in any standard textbook of neurosurgery. In many instances,

only at operation can it be ascertained whether the lacerated vessel is a middle meningeal artery or vein, or a dural sinus. After operation the patient requires transfusion and other supportive measures.

Close postoperative observation will detect the complications of cerebral edema, neurogenic hyperthermia and recurrent bleeding. If one of these appear, early therapy, as indicated, is employed to combat the presenting complication.

Case Histories

Case 1.—*History*: The information obtained from the patient's husband was that this fifty-five year old, Swedish housewife fell backwards onto the pavement, after being accidentally pushed by another pedestrian, at 9 p.m., February 26th. The patient felt slight discomfort, had no impairment of consciousness and resumed her walk to a friend's house nearby. Within a half hour the patient commenced to vomit, which she did several times and with an hour became drowsy and difficult to arouse, and finally comatose. The patient was brought to Lenox Hill Hospital, being admitted at 1 a.m., February 27th, four hours after the accident.

Clinical examination: The patient was in stupor, and responded only slightly to pin-prick. Cranial nerve examination revealed a somewhat indistinct superior nasal margin of the left optic disc with a little fullness of the veins on the same side. Response over the right side of the face was a little less than over the left. Facial asymmetry could not be evaluated. Deep reflexes on the right were three plus and on the left two plus. There were positive bilateral Babinski signs. The patient moved only the right arm and leg very slightly on painful stimulation. Increased tone was present in the right arm and leg. The impression was that with the history of trauma and gradually developing coma and right hemiplegia a left epidural hemorrhage was most likely, although the possibility of a subdural hematoma was considered. It was suggested that anterior posterior and lateral stereos of the skull be made, because, if a fracture line could be demonstrated crossing a branch of the middle meningeal artery, it would be helpful in diagnosis. A lumbar puncture was also suggested for measuring the spinal fluid pressure and to remove a small amount of fluid, enough to determine its color. An exploratory operation was ordered, regardless of what the above procedure revealed.

Laboratory and special tests: Lumbar puncture (Feb. 27th at 1 p.m.): Initial pressure was 280 millimeters of H_2O; six cubic centimeters of clear, colorless fluid were removed; final pressure was 180 millimeters.

X rays of the skull were reported as follows: Feb. 27th: Examination of the head showed evidence of a fissure fracture arising on the left side about one half inch above the external auditory canal and running backward and slightly upward through the parietal bone for a distance of approximately three inches. There was another fissure type of fracture approximately one inch long in the anterior half of the squamous portion of the temporal bone. There was no depression of fragments, and no other change was noted.

Spinal fluid examination (Feb. 27th): Red blood cells 950 per cm., globulin negative, colloidal gold negative, Wassermann negative, sugar 81 mgm. per 100 cc. fluid, protein 30 mgm. and chlorides 734 mgm. Blood Wassermann (Feb. 27th) was negative.

Blood count (March 1st): Red blood cells 5,600,000, hemoglobin 100 percent, white blood cells 10,400, polymorphonuclear leucocytes 78 percent, lymphocytes 22 percent.

Operation: The patient was transferred to the operating room at 1:45 p.m. on February 27th and returned to the ward at 6:50 p.m. The following are the neurosurgeon's notes dictated after the operation: "A burr hole in the left temporal region revealed that no epidural or subdural hemorrhage was present in this region, although the brain cortex appeared somewhat dusky. In the posterior temporoparietal region the decompression was made directly over the center of an epidural hematoma measuring approximately ten centimeters in width and five centimeters in depth. The clot was quite firm in consistency and had to be scraped away in several places, being too thick for removal by suction. The clot was quite densely adherent to the dura for approximately three millimeters in thickness. In many places where it was removed from the dura, bleeding started at once from the underlying branches of the middle meningeal artery. The posterior branch was found to underlie a fracture line in the skull and had been completely severed. On removing the clot over this vessel blood spurted freely, but the bleeding was promptly controlled by picking the vessel up with forceps and coagulating.

"Distinct lacerations in three other smaller branches were also found, as well as bleeding points mentioned. By the time the blood clot had been removed the brain had commenced to pulsate and had expanded slightly, but there was still a space of approximately five centimeters in depth between the dura and the bone. At the termination of the operation the patient was able for the first time to utter a few incoherent words and move her right arm and leg slightly. Although the patient lost very little blood at the operation, she was given a blood transfusion at the termination of the procedure.

"Because of the compression of the brain for approximately fifteen hours, it would seem that the recovery period would be slow. During the period of compression there must have been very little blood circulating through the portion of the brain compressed by the clot, and such ischemia would, of course, cause destruction of the nerve cells".

Course: The patient required several lumbar punctures and some hypertonic sucrose infusions for the first week postoperatively. She showed gradual improvement. Thirty-six days after admission the patient was discharged (April 2d) without residual symptoms.

Follow-up: The patient was seen two months later and was reported to be perfectly well.

Case II.—*History*: (Information obtained from patient's father and mother). An eight year old school boy, while playing, fell backwards and struck his occiput on a concrete walk. This occurred on November 10th at 1 p.m. The child got up and attended the afternoon session of school. He walked home, vomiting en route and immediately fell asleep. It was difficult to arouse him but his mother was able to wake him long enough to obtain the story of the accident. Projectile vomiting occurred every five minutes, fifteen times in all while the patient was at home. He became unconscious at 5 p.m., the day of the accident and was treated that evening by the family physician for concussion of the brain. The patient was admitted to Lenox Hill Hos-

pital, November 12th, at 10:15 a.m., two days after the accident.

Clinical examination: The patient was comatose and cyanotic unless kept in an oxygen tent. Fundus examination showed venous congestion but no edema of the optic discs. Facial movements could not be demonstrated. The left arm moved considerably but the right only slightly. The right leg actively pulled away from painful stimulation. None of the deep reflexes could be obtained. The right plantar reflex was a weak flexor response as compared to the left. These findings were reported by the neurologist called in consultation by the surgical service. On admission the patient had a blood pressure of 140/90 mm. Hg., a pulse of 104, stertorous breathing and a temperature of 101°. There was a slight hematoma over the left frontal protuberance and the right occipital region appeared flatter than the left.

Laboratory and special tests: Lumbar puncture at twelve noon of the day of admission was reported by the intern to be under slightly increased pressure and clear. It contained fifteen white blood cells, 105 red blood cells per cubic millimeter, 74 mgm. sugar, 24 mgm. protein and 784 mgm. chloride per 100 cc. of fluid. The culture was sterile and the Wassermann negative.

Lumbar puncture done later in the afternoon of the same day was clear and under 420 millimeters of H_2O pressure.

Complete blood count (Nov. 12th): Red blood cells, 5,350,000; white blood cells, 4,800; hemoglobin, 110 percent; polymorphonuclear leucocytes, 75 percent; lymphocytes, 25 percent.

Blood chemistry: Urea nitrogen 19.1, creatinine 0.8, uric acid 3.5, sugar 114 mgm. per 100 cc. of blood.

Catheterized urine specimen showed one plus albumen, positive sugar, moderate amount of acetone but no diacetic acid. Microscopic examination revealed a few hyaline casts and scattered pus cells.

Treatment and course: A subdural hematoma was considered but conservative treatment was carried out on the recommendation of the consulting neurologist; the treatment to be interrupted if the clinical picture changed. The patient was placed in an oxygen tent and received caffeine sodiobenzoate by hypodermic, grains four, every four hours. Fluids were limited to 600 cc. per twenty-four hours, given as a five percent glucose solution by Murphy drip. At midnight of the day of admission the patient's temperature had reached 104.6°, breathing was rapid (rate 48), pulse rate 160, while the patient was in coma. At 6:45 a.m., November 13th (the following morning) both the pulse and heart sounds were imperceptible, respirations were shallow and the temperature reached 109.8°. The blood pressure had dropped to 50/0 mm. Hg. The child expired at 7:00 a.m., November 13th, approximately twenty-one hours after admission, and following an unconscious state of sixty-two hours.

Pathology (summary): Primary: Fracture separation of left lomboid suture; epidural hematoma over left occipital region (posttraumatic); bronchopneumonia. Secondary: Scalp: hematoma above left supraorbital ridge, hemorrhage into left occipital muscle; brain: compression of left occipital lobe and left cerebellum with marked congestion of the blood vessels; spleen, acute congestion; general, cyanosis.

CASE III.—*History*: A fifty-six year old, married business man was struck down by a taxicab on the morning of December 2nd (exact time not known), and in a semiconscious state was first seen by his family physician after having been brought to Lenox Hill Hospital by another hospital's ambulance. He was admitted at 10:30 a.m. At 4:00 p.m. the same day, it was noted by his physician that the left pupil was dilated. Neurosurgical consultation was called and operative preparation was ordered immediately for an epidural hemorrhage.

Laboratory findings: X rays revealed an oblique fracture of the middle of the shaft of the left clavicle (Dec. 2nd). A complete blood count showed a hemoglobin of 102 percent, 5,490,000 red blood cells, 20,900 white blood cells, polymorphonuclear leucocytes 93 percent and lymphocytes 7 percent (Dec. 2nd).

Operation: The following is taken from the neurosurgeon's dictated notes. "The patient is in *extremis*, following an automobile accident. Although there are multiple injuries, it is believed that the major damage demanding immediate operation results from a hematoma of the left extradural space, beneath the site of the blow on the head—left temporoparietal region, producing marked prolonged external compression of the brain. A very grave prognosis is given. A trephine opening has been made with the bone drill; thick clotting blood was found beneath the inner table in the extradural space. When the opening was enlarged, a large amount of clotted blood protruded. Much more was removed by suction. The dura was markedly depressed and it was assumed or believed that the blood clot was about ten centimeters long, seven centimeters from above downward and four centimeters thick, being biconvex in shape. (The patient was unconscious, had deep stertorous breathing, poor pulse, and was in an extremely serious condition). Following evacuation of the blood clot, and packing of the wound to control further bleeding, the patient's condition improved a little. All efforts were directed towards treatment for shock, lowering of head, intravenous injections of saline solution and blood, aspiration of trachea, etc. The patient rallied slightly, but suddenly became worse and expired on the operating table (7:22 p.m., almost nine hours after admission). The condition of the patient before operation would lead one to believe that the case was hopeless. Evacuation of the extradural clot should have been done sooner, but, in the absence of knowledge of the other injuries, one could not give an opinion as to whether or not the patient even then would have survived".

Comment on Case Reports

It is interesting to note that not one of the cases presented the classical history of unconsciousness, lucid interval and recurring unconsciousness. The cases belong in the second and third subdivisions of the classification outlined in a previous paragraph.

The patient in Case I had no degree of conscious loss, but showed delayed and gradual course toward unconsciousness plus a presenting right hemiplegia. This was conclusive evidence of an expanding hemorrhagic mass. Although further evidence was not necessary, the fracture of the skull and the typical finding of clear spinal fluid under increased pressure were present. By computing the Ayala index (180 x 6 cc./

280), resulting in an index of 3.9, there was a further sign of a space occupying lesion.

In Case II, the history following the head injury was similar to that in Case I in that there was no impaired consciousness at the time of the accident and unconsciousness followed a short time later. The additional history, in this case, of vomiting attacks had significance. The history, regardless of any other findings, was significant enough to indicate exploratory operation on the same day. This case belongs to the second division of the classification given in this paper. When the patient was sent to the hospital two days after the onset of coma, it was gathered that the examiner judged that any operative procedure in the boy's extremely critical state would have little or no chance at the moment. It was most likely that the bronchopneumonia occurring after the accident aided the intracranial hemorrhage to bring on death. It appeared that if benefit was to be given, it would have been within twenty-four hours of the accident and before the bronchopneumonia set in. Whether the bronchopneumonia or the epidural hemorrhage was the major cause of death, one cannot say.

Case III belongs to the third division of the classification. There was undoubtedly a high degree of shock and most likely other internal injuries as was suggested by fracture of the clavicle. The surgeon's note is self-explanatory.

Summary

The subject of epidural hemorrhage is reviewed. The anatomical, pathological and diagnostic aspects are presented. A broad classification has been given to include various ways in which epidural hemorrhage reveals itself, with much importance attached to the history. The classical history of unconsciousness, lucid interval and secondary unconsciousness should not be considered specific but rather as only one of the ways in which the condition is reflected. Mortality can be lowered by early diagnosis and by early operative intervention and treatment.

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1882 Grand Concourse

WITCHCRAFT

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In all of history there has been nothing that so eloquently cries for some plausible explanation as the phenomenon of witchcraft which extended over several hundred years. In perplexity, one is apt to brand it as a form of barbarism. The term barbarism, however, is relative and in the analytical sense represents a form of mass regression. Regression always serves a purpose, whether it be for healing, for discovery, or for other purposes. Thus, one must decide, in insulin shock therapy, that there is an induced regression. A man under considerable social stress may regress and commit some crime. One cannot call these phenomena displays of barbarism. One must hesitate, then, to make such dogmatic statements about witchcraft.

Any social institution that survives through several centuries may be expected to change in form, if not in name, during this period of time. This is not a difficult matter to verify and I shall not take the space to do so here. A study of the literature of witchcraft leads one to the view that in different ages and countries, witchcraft came to mean something different. In general, however, witches were women and they were punished. The severity of punishments to witches may surprise us in a day when we treat women with relative respect. But if one examines the manners and customs of bygone ages one finds that the physical person was hardly accorded the respect that it is today. Today, capital punishment exists for the crime of murder only and as a rule for murder with intent. Women at times are given this punishment. It is readily conceivable that in an age where a man might be hanged for picking a pocket, less respect also would be paid to the person of women. I can readily show what I mean. If a man were caught picking a pocket in a subway today no one would conceive of having him electrocuted. As a matter of fact, after his arrest he would soon be forgotten. Imagine your consternation, if the next day you read in the papers that this man had been electrocuted for picking a pocket. This must illustrate how times have changed. Even in the early days of our country, when times were more individualistic, more rugged, and more dangerous, horse stealing might lead to hanging. Today it would be inconceivable that a car thief be executed. Men without restraint are apt not only to be overly criminal but also overly just.

Witches have not always been condemned. At one time there were white witches who did only "good" and black witches who did only "bad". It may be seen, then, that the term "witch," was not always weighted with the connotation of "badness" or "evil". There is the suggestion, too, that witches, being in a position to do good, must have been, at least to some extent, in good standing and a power with a certain mass of people. Today, medicine is so well organized, it is difficult to conceive of a time when the medical profession did not have scientific eminence and importance, and when many old ladies carried on the traditions of healing by herbs, potions, ointments and the like. Here was a source of power relegated to a body of women. Even today, many old grandmothers have their methods of healing and not infrequently they get results. I well recall one patient telling me that as a boy of nine he had warts on his hands. His grandmother took him into the woods and rubbed the belly of first a snake and then a frog over his hands. The warts disappeared. We must recognize that the fright involved may very well

have shaken his entire vegetative system and contributed to a gradual disappearance of the warts. On the other hand, the remembrance of the experience would make the warts themselves repulsive and fearful. There would be a desire to forget them and with this, less of an interest in picking at them in various ways, which latter activities would tend to cause their continuance. We must admit that much of empirical medicine has been learned from the use of these simple remedies. In a less organized age, it also is conceivable that failure to get results might enrage a family against some witch, with dire results.

There can be no doubt that at certain periods, witches were those women who were suffering from conditions that we today call schizophrenia and epilepsy. It must be remembered that the day of large institutions and custodial care for the criminal and the insane is rather recent. It is only over a hundred years since the insane and the criminal were separated. Some of the tests for this type of witchcraft give clear evidence of what was the underlying basis. The sign of insensibility to pain at certain sites is evidently a narcissistic phenomenon. The floating and swimming tests also would doom the thin and nonathletic schizoid type. Blue spots on the skin would more readily occur in the thin dermal-respiratory type of individual. Being weighed against a Bible also would mitigate against those of slight build. And how else can one label the inability to shed tears, and a general indifference to the trial as appropriate phenomena for our current label. Also, the witch's tendency to confess when an animal was slain, would be in accord with the recognized sensitivity and restraint of aggression in schizoid types. As for "making faces" and "mumbling," it is only too obvious.

We may momentarily turn to Henry the Eighth and his attitude towards women. It would be a mistake to believe that the mass of people entirely disapproved of his methods or that his actions did not evoke many imitators in all walks of life. Woman's lot on earth has not always been easy. Thus, in 1588, Bishop Jewel, preaching before the Queen, said; "It may please your grace to understand that witches and sorcerers within these few last years are marvelously increased within your grace's realm. Your grace's subjects pine away, even unto the death, their color fadeth, their flesh rotteth, their speech is benumbed, their senses are bereft." It would be amiss to believe that where danger was widespread and general, that women themselves did not, out of necessity, become more wary, calculating, and well-inclined to point the finger at scapegoat witches in order to protect themselves. Anyone who has done any analysis at all must recognize how a childhood with cold, rigid, and irascible parents can leave the individual pale, immature, and terrorized, but inwardly hating. In this connection we may well inquire into the masochism, terror and inner hate of the prostitute.

At other times witches obviously were what today are called prostitutes of one form or another. Saturday was the Witch's Sabbath, a day that prostitutes of today would no doubt consider as their best business day. The supposed haughty nature of the witches is easily rivalled by the common epithet of hussy. Dürer's "Four Witches" are hardly unattractive. What else but the illegitimate child can be meant when it was said that witches had a compact with a man in black who left her with one or two imps who suckled at teats secretly located at different parts of her body. The secrecy of the suckling itself has been displaced to the socalled secrecy of the teat, while the malposition of the teat must mean the social malposition of the child. That witches were prostitutes is openly attested to by the fact that at times they actually were accused of "immoralities". That there was nothing supernatural about this, may be seen when it was felt that, "the women who are turned off (by their husbands) have recourse to witches, who are supposed to inflict barrenness, impotence, or the most dangerous diseases, on the former husband or his new wife". Perhaps a questionable nobility prevented accusation of the wife herself for the acquisition of venereal disease, whereas a husband who unjustly turned off a wife might very well be impotent, in the first place, through his own actions to which might be added a sense of guilt and even castration anxiety. The claim that man's lands could be made barren by a witch was a further projection of these same ideas. None the less, some witch suffered.

As one looks back on these occurrences, one cannot help but feel that upon witches were projected many hostilities against women, now lightly and jokingly spoken of in connection with the mother-in-law, more critically in connection with the alleged severities of stepmothers, and quite sarcastically in connection with women who venture into public life. One should not believe that everyone looked happily at Queen Elizabeth, or that those witches of old, the Amazons, were lightly regarded. Even today, aggressive and vindictive women are called witches and children fear old or begging women. The fear of gypsies is not remote from our subject.

Nor are we to believe that the witches of old were only of the type portrayed in fairy tales. Even the tale of Snow White finds a witch in the guise of a queen, or vice versa, and witches once were conceived as being of the matronly and ignorant types. In more lusty days of intrigue, women were in positions where they could serve posts of treachery. In such instances, the accusation of witchcraft would be no more than an accusation of unfaithfulness or betrayal. It also was possible to hush many a scandal by making the accusation against some domestic in service, and vengeance would, in a way, be appeased. In milder form today one wonders how much abuse secretaries, maids, and even wives assume when some female member fails in her obligations at office or home.

The picture we have today of the witch as an old hag with a broom can only be a highly imaginative picture and not a factual account. This remaining symbol of the witch with her grimace, bent posture, aged look, going up the chimney in heat, with a broom between her legs, is the symbolic sexual picture of the narcissistic woman in ecstasy. The accusations of supernatural tendencies in witches may have occurred at times, for there always are people who are willing to believe in the fantastic, as there are people in some hospitals, today, who might interpret a flying dream as an actual broomstick ride they had the night before. The culture of each age has its glamorous coat and it may be that some day, a Hollywood glamour film, hidden away in a time capsule, may lead people to believe that our age was one of exceedingly glamorous rather than merely human women. The witch riding

the broom has its counterpart also in the housewife who does not sweep but leans on her broom as she gossips with anyone who passes.

That witches were feared (and loved) cannot be gainsaid. It is true, too, that they possessed a sort of power. But in what age have women not possessed power? So often they are the power behind the throne. Indeed, they are the guardians of the hearth. And even today we read of hapless men who get embroiled with women and become the victims of one form of extortion or another. No doubt, such men dream of witches unless they drink and dream of pink elephants rather than the pink flesh of some former secret love. It would be highly vain for us to believe that men in past ages did not see what the institution of witchcraft meant. Fundamentally, it was a scapegoat mechanism, assisting to preserve the social order intact. One would hardly believe Lord Bacon, Goethe, and Shakespeare, who wrote of witches, to have had any such beliefs as we fantastically ascribe to past ages. In fact, in giving so glamorous a coating to the past, one projects into history one's own conception of the terrors of childhood. One can readily visualize someone with tongue in cheek, during the reign of Elizabeth, when the Earl of Derby, who probably died of poison, was said to have died of witchcraft. One also can suspect what people had in their minds when they pulled the mandrake roots from the ground. (The mandrake is a plant whose roots are so various that they may appear to have the shape of a man, with the thinner hairy roots resembling a beard. When pulled from the ground it was said to scream.) What psychiatrist has not seen a woman tearing at her handkerchief as if it were some person.

Lastly, for this paper, there must have been the problem of the undesirables of the family; those women who revolted, disobeyed or even those who kept on living and so delayed inheritances. Some of the paintings of old clearly show that some of the witches also were abortionists. In our age all of these same feelings exist, yet with more restraint, and more notably repressed, or solved in a somewhat different way.

There is yet one point that can bear some elucidation. As the conception of the witch represents the condensation of all that for hundreds of years was considered to be "evil" in women, so the devil, with whom each witch had a "pact", can be only the condensation of all of the socalled "evil" that men prompted in the witch, for it wisely was seen that the ways of man and woman cannot be separate. And so King James found the devil to be for the witch what the serpent was for Eve. The devil was the seducer, the wife deserter, the villain, the pimp and many other forms of villainy, at various times, all condensed into one.

The one phenomenon that still may leave us gasping is the severity with which witches were dealt. But as I have shown, even this can be explained on the basis that some ages have been more violent, and further, that we have an illusory tendency to feel that such times cannot occur again, because we feel we have safely repressed our own hectic infantile past. This illusion, like all others, will suffer the fate of all illusions, each time there is an age that calls for a return of the repressed. Thus, witchcraft was a craft, and a goodly part of it was nothing more than what has been called "the oldest profession in the world".

25 West Fifty-fourth Street

IS HITLER INSANE?

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Adolph Hitler, in a radio address delivered on January 30, 1939, stated the following thirteen points:

1. "Even when I was a boy of twelve, I was a prophet and the Jews then laughed at my prophetic abilities."

2. "They hated and belittled me then, and my hatred of them dates back to my childhood." This is a rough translation of the German.

He then continued with a number of implications of why he hated the Jews: 3. Because they were communists and capitalists. 4. Because they were capitalists they were internationalists. 5. Because they want to bring on a world war. 6. If they bring on a world war they will be destroyed.

7. He accused Secretary Ickes, Winston Churchill, and Duff Cooper, as being the individuals and the type of people who are trying to stir up hatred and war, and if war comes, they should be blamed. 8. He accused the democracies of spreading hatred, of being foolish, of making ignorant mistakes, and laughed at them for having such terrible labor and unemployment problems. 9. He admitted that his farmers have reached their limit, and complained about his export and import difficulties, and blamed his enemies.

10. Now that he already admits defeat and sees the future when his back will be against the wall, he threatens more war and reprisals. 11. He assures the world that eighty million people will not starve; hence he prophesied that he would rob and plunder as long as he could and remain a gangster until he was crushed. He has reiterated this many times with emotional threats and accusations.

12. Believing that he is right, because psychiatrically he has no insight, or lacks understanding of his own mental condition, Hitler blames others, accusing his imaginary or supposed enemies, and even though he has already brought about incredible suffering and bloodshed in unison with his unconscious sadism, he continues his threats and promises war and destruction unless he gets what he wants now, and what he wants in the future. The fact that he wants something makes it right. The fact that others may deny what he wants makes it treason, corruption and degeneracy. Such is Hitler's thinking, and this he has been trying to convince the German people as being ethical, logical, and right thinking.

13. Then he continues: "If you dare refuse me what I want, I'll war on you, and so will my invincible friend, Mussolini."

So Hitler thinks he can do no wrong, nor can his friends and generals. But he reasons that anything his enemies, or possible enemies, may do is beyond any shadow of doubt, degeneracy, Communism, Judaism, treason, corruption, world destruction, and hence, they

must all be destroyed. He further reasons that the sooner his possible enemies, or those who do not agree with him, are destroyed, the better it will be for the world, and by carrying out such activities, that he is the martyr of the world. So Hitler rationalizes. He sees only what he wants to see and he blinds himelf to what he does not want to see. He exaggerates what he wants, and he minimizes or forgets completely in accordance with whatever will suit his pleasure principle.

In paranoia, often there is no, or little deterioration of the intelligence, and there usually is a "goal idea" to many of the thoughts or ideas put forth. On many subjects, the individual appears most reasonable and rational, yet his rationalizations are generally so markedly one-sided, that he is undoubtedly insane, even though many people may not recognize such as insanity. This is one of the most dangerous forms of insanity.

Hitler says he is not against religion because he has even given millions of dollars to churches. Yet he has killed and jailed many religious people, and those belonging to the ministry, even those of his own former religion. He is much like the farmer who at first fattens his pig, and then knocks him on the head with an axe. It is possible that Hitler actually believes he is not against religion. He does not know better. He has said that if ministers of the Church discuss politics, he will destroy them. If the priests speak for Nazism, then it is religion and not politics; but if they speak about something that may be construed as not being in favor of Nazism, that is politics, and they should be destroyed. One need not be a psychiatrist, a logician, nor an educator to see the fallacy or the insanity of such thoughts, and to recognize not only religious intolerance but a desire for the destruction of religion.

Analysis of Thirteen Points

First, let us analyze the thirteen points mentioned above, and then discuss the unconscious processes of Hitler.

1. An individual does not ordinarily become a paranoiac suddenly. He usually has peculiarities from childhood up, although he may have been intelligent, and even had a good I.Q. It is not normal for a boy of twelve to feel convinced that he is a prophet and that he has prophetic powers. It is quite possible for a child to feel that he is "psychic" and even carry it to the degree of "mediumship"; but suppose Hitler at twelve was psychic or was a medium, he could not have carried such grudges and harbored such hatreds against an entire race, because a few Jewish people refused to believe in his prophetic abilities. Such grudges, hatred and sadism, do not go with mediumship, even if you would accept mediumship and psychic phenomena. At best, it appears from Hitler's own statements that he was paranoid at the age of twelve. To say the least, he certainly had strong paranoid tendencies at twelve, which matured as he became an adult, which is usually the historical sequence of paranoia. Then the older he grows, the more paranoiac he becomes. There is only one man who could possibly have cured and saved Hitler, and that man was Professor Freud himself, whom Hitler hated, and therefore Freud could not have cured him. (Of course we know that Dr. Freud is dead.) Then too, Hitler will remain paranoid because no one can convince him that he is paranoid, and hence he cannot change for the better.

Hitler had many pleasant and unpleasant experiences during childhood even with his own coreligionists (Catholics) as well as noncoreligionists. But he remembers only what he wants to remember, and one of the most terrible thoughts which he keeps in his mind is that the Jews refused to believe in his prophetic powers. Hitler identifies himself with Christ, he is jealous of Christ and therefore hates Christians. He also hates Christ because Christ was a Jew; and because of Christ's international recognition, which Hitler himself wants, Hitler envies Him. This international recognition Hitler would force upon the world if he could, even at the expense of the destruction of great parts of the civilized world.

Surely it is not normal for a twelve year old boy to have such tremendous powers of intuition or "hunches" and yet be normal. If he had such divine or supernatural powers, why did he not win the first World War for Germany against the Allies? He fought for Germany in the first World War. If he is truly divine, why so much bloodshed, threats, persecution, destruction, and insane reasoning? You may ask, why do not the German people recognize his paranoia? The outstanding psychiatrists do, but remember there is no free speech in Germany. The first psychiatrist who would hint that Hitler is insane would be sent to a concentration camp where he would be beheaded and no one would know the true reason. The ostensible reasons would be strongly played up, dramatized, and no one would even know what the whole incident was about. They would be afraid to find out.

The ordinary layman cannot recognize paranoia and even the intelligent physician cannot diagnose the condition except in its most advanced stages. As long as Hitler is able to take some advice and his country is administered by his appointees, conditions can continue in Germany more or less as they are. There is very little deterioration in paranoia. In this disease, the persecution is directed first against one group of people and then another; then against institutions, and gradually, for various reasons, larger groups and more institutions, and finally very large groups become involved. The less Hitler has to do with the government, the less damage he will do, but he will want to be active unless he is kept unconscious. If the people do block or frustrate him, he will identify himself with the people and try to work for them according to his own mental capacity, but even then, he will find reasons for destroying certain groups. But if, on the other hand, one or more groups should block him, then he will find plenty of reasons for destroying every one of them, if he could. This applies not only to those who actually try to stop him from doing what he wants to do, regardless of whether it is right or wrong, but also to those Hitler thinks may try to interfere with him. Therefore, it is a serious situation with Hitler, because his delusions and his ideas are such that he may think that anyone may try to interfere with him. The question is: Who is the next group of victims? A dangerous paranoic, who has so much power, and who can reward or punish those who carry out his sadistic commands, will always find groups for destruction as long as he has power.

2. Why did Hitler care whether the Jews believed in his prophetic abilities or not? Why is this so important to him? Is this really of any importance? How does Hitler know that the Jews of Austria hated him when he was a boy of twelve, or before? The probabilities are that, even during his childhood, he used the mental mechanism of "projection". Hitler hated the Jews; therefore, to defend his guilt feelings, he reasoned backwards, that they hated him. In fact, the Jews did not care then whether he was alive or dead. They neither hated nor loved him. At that time he was of no significance, of no importance; but his delusions were important. Since he hated the Jews and projected this hatred in his own mind to mean that they hated him, this may have been the origin of his entire persecutory system against the Jews, which no doubt will be his own undoing as well as the destruction of many Jews and non-Jews. If he had not had this unconscious mental mechanism of projection, millions of lives could perhaps have been saved and Germany could possibly have become a great country again. But if present conditions continue, Germany can make no further progress, in spite of Hitler's boasts, but may expect the same fate as that which overtook Spain following the insanity of Spanish Royalty with their Inquisitions of Jews and Protestants, the exodus of the Jews from Spain, and finally the loss of Spanish world power. What else can one forcast for a nation whose leader is insane, and who is so powerful that his nation must follow him.

Projection is a common mental mechanism in paranoia. The paranoic does not know that he is projecting. He blames the other fellow or group of fellows and looks for further faults and troubles and should he find the slightest loophole, he makes a mountain out of it, and reaps revenge to the nth degree. Then projection and paranoia go hand in hand with fault-finding, blaming the other fellow, rationalizing (seeing his own side, and not the other), magnifying what he wants to see, and blinding himself to what he does not want to see, and so reason and judgment must be warped. Mind you, in paranoia, these mechanisms function strongly, forcibly and unconsciously. Now combine such mental phenomena with mob psychology, and you have Hitlerism and destruction. If you talk to a paranoic on matters which do not involve his major delusions or his major mental mechanisms, you may recognize nothing abnormal.

3. All normal people who have some education and some reasoning ability can readily understand that a group of people cannot be communistic and capitalistic at the same time. But if you take a sample of a number of millions of people spread over the various countries of the world, some of them may be capitalists, some communists, some laborites, and so on. Now in paranoiac Hitler, the rationalization mechanism drives him to see what he wants to see and intensifies his hatred in order to overcome his sense of guilt, and he may reason thus: Certainly some Jews are communists, so let's keep in our minds, or (through association) insist that they are all communists, and give them all possible punishment. If they are not all communists, then some of them are capitalists, then give them all possible punishment that can be meted out. If they are nothing (politically), then destroy them because they are nothing. If they are something politically, then destroy them because they are something. His lieutenants are told to find out some possible points about his socalled enemies which may be true or false, it does not matter which. The same penalty is meted out whether guilt or innocence is considered. If they are innocent, they can be made guilty. If they have had no trial, they are guilty anyhow. So it is not a question of guilt or innocence, but a question of sadism. Sadism has no religion, no ethics, honesty, law, or compassion. This tremendous mental force will have its way, especially if combined with paranoia. You will ask then, What shall be done? Let the world know that Hitler is insane. Later, perhaps in six to twelve months some German people will also find out that Hitler is insane. When they know and understand the whole truth, even though the seeds of danger, hate and destruction, have already been implanted in them, some of the Nazis will gradually change and come back to earth again and become civilized.

4. If the Jews are internationalists, this worries no one except Hitler. If he tries to destroy the Jews, it is quite natural that they will try to protect themselves in some way, such as boycotting his business and trade all over the world. There are Germans, Englishmen, Frenchmen, Italians, etc., all over the world also, including the old and new worlds and both hemispheres, but Hitler does not call them internationalists. It is certainly a greater crime to kill millions of defenseless people than for these defenseless people to try to protect themselves from the wrath of a lunatic by boycotting his trade in non-German countries. But to Hitler internationalism is a crime. Therefore, he believes that they should perhaps all live in one country or be killed. Has he helped place them in one country? Do all Germans live in one country; all Englishmen; all Americans; all Frenchmen; etc? But Hitler sees only what he wants to see. Only those are outcasts and internationalists and criminals and cut-throats who fit in with his paranoid and sadistic complex. In the final analysis, a paranoic who is constructive is quite rare; but to be destructive is the general rule.

5. Hitler claims that it is the Jews who want a world war. The first world war was not caused by the Jews, but they were loyal and faithful to their individual countries as were the other peoples. The German Jews died for Germany, the American Jews for America, etc. But these facts in paranoia have no values. Projection must be resorted to and hence even the layman knows of the socalled scapegoat. There must be a scapegoat. If the democracies do not like war, blame the Jews for war. If the German Jews refuse to fight for Germany, they will be shot down. If they fight for Germany, they are put in front ranks and shot down anyway. According to Jewish history, the Jews have never been warriors. This may be one of the main reasons why they are internationalists and are absorbed politically by the various countries in which they live. In Hitler's mind, there is always war, hatred, sadism. The book, *Mein Kampf* (*My Battle*), supposedly written by Hitler, is the product of a sick mind. Isn't it strange that the human mind wants a scapegoat? Even in old religious times, an innocent animal had to be sacrificed for the sins of man. This is also a form of the projection mechanism as well as sadism. But there are larger degrees of pleasure and there is a lesser feeling of guilt through the finding of the scapegoat. In a cer-

tain section of America, a crime was committed but an innocent man was punished which apparently was satisfactory to some people, because they showed no considerable concern about it. The holding and punishing of people for ransom is well known. There is some projection even in the United States by socalled normal people, but we have leaders here who recognize projection quickly and easily. Then they do something about it. If the leader himself is a paranoic, as is the case with Hitler, nothing good can be expected in Germany as long as he is active and powerful, because even normal leaders do some projection instead of solving their problems justly. Therefore, you can imagine the tremendous degrees of projection and the hopelessness of insane evasiveness and unconscious phenomena, if it is not recognized by the individual himself.

6. Hitler threatens that in case of a world war, all the Jews will be destroyed. There is no doubt that in case of war, the German Jews will be destroyed, but his insane wishful thinking that all the Jewish soldiers of the world, in case of a world war, will be destroyed, is as ridiculous as are some of his other delusions. This childish, sadistic and insane thought is to be expected of Hitler. He would long ago have destroyed all the German Jews, were it not that he feared the democracies, or that he could possibly use them for ransom, or get more sadistic pleasure by dragging out the punishment. It is impossible to destroy any one large group of people or race numbering in the millions, who are spread all over the world which is supposedly civilized, if these people are self-sustaining and have given the world some of its greatest leaders, and if parts of the world remain sane. It is impossible for the entire world to go insane at once. It is true that sections of the world have been influenced by insane people, such as Joan of Arc, certain members of the Czar's family, and some members of the Spanish royal family, particularly when these countries were burning with inquisitions and pogroms, to say nothing of epileptics who were in the royal families from time to time. Certainly Cæsar was an epileptic. He had his physical and mental attacks which were followed by periodic insane attacks, and yet he continued to rule Rome. Members of royal families, dictators, senators and councilmen can also be crazy, neurotic, epileptic and drunkards, and if they are, it is just too bad. In democracies, however, something can be done about it. But in the case of a dictator, one must wait for his death, suicide, or assassination, which is then followed by revolution and rebellion. At best, Germany has a dark future. It is unfortunate, however, that dictators will not solve their problems, but force the democracies to do it for them.

7. Hitler's accusations that Secretary Ickes and the other statesmen are just the kind of men to cause wars, or who will create wars, are insane projections. It is Hitler who is trying to create the wars and who is making life miserable and often impossible for more and more people. These great statesmen, whom Hitler accuses, showed Germany that they understand a thing or two, which aroused Hitler's guilt feelings, so he must blame them. A principle in unconscious psychology is, if someone shows you up, or pushes you against the wall, or lets you know he knows what a skunk you are, in order to defend yourself, you will immediately hate him, look for faults in him, blame him for your troubles and others, and make it appear that he is the rascal rather than yourself. This is also done consciously. Here you see the same old crazy pattern of Hitler. Any kind of excuse, or none at all will satisfy a predjudiced people, but not a reasonable, democratic, sensible public like the citizens of the U. S. The democracies know that Hitler is "off", but the layman cannot express exactly in words and explain what kind of "off-mindedness' it is and just how he is "touched in the head".

8. Hitler has belittled the democracies, particularly the United States. He laughed at the American unemployment problems and sneered at so many people being on WPA. As a matter of fact, all of Germany is on WPA, whereas in America only a small percentage of people are helped by public funds and public works. In spite of his enumeration of the progressive steps taken during his dictatorship, he still blames his difficulties on his many enemies, and promises more war if Germany should be short of food or if their imports and exports do not come out as they expect. If he is so successful, why worry about his enemies, and why have so many enemies, and why worry about possible shortages? But knowing that things are not as they seem, he is already blaming his failure on his enemies outside Germany. Certainly the Jews in German concentration camps have not done and cannot do any harm in Germany. But Hitler can never make a mistake and he can never do wrong. Imagine President Roosevelt blaming Hitler, Germany, or some Germans if things went wrong in the United States, such as food shortage and the falling off of imports and exports, and then threatening Germany that if they did not see that we had plenty of food and plenty of imports and exports, that we would war on Germany. Can you imagine such a ridiculous idea? But in Germany, what Hitler says is holy, even though it is crazy.

9. Why does Hitler admit that his farmers have gone their limit? His deterioration has not reached the stage where he is an obvious lunatic, such as could be recognized in a patient suffering from advanced dementia precox, paresis, manic-depressive insanity, senile dementia, involutional melancholia, or other easily recognized psychosis. He is suffering from paranoia. His condition is a mental disease where the individual has good judgment in some fields, except where his delusions lie. Hitler sees the handwriting on the wall. His people have been telling him all along that there are food shortages and the world also knows it. This he must recognize. Then German trade with foreign countries is falling off. His money has been spent on war material and he has little else to show except what he obtained by robbery. Guilt feelings and self punishment follow.

How would a normal person handle this situation? He would be tactful, diplomatic, business-like, call his advisers together, do some research work and, in a friendly spirit, work out the problem according to the best scientific and economic advice. But what does paranoiac Hitler do? He immediately threatens his enemies. He blames individuals and groups and then says the democracies wanted war, when Hitler and his friend Mussolini, and his yellow Aryans declared they would fight the world. Then he says, "eighty million people won't starve; we will fight our enemies". Then he ties up his enemies, his starvation, his foreign im-

port and export business with the Jews, communism, the democracies, his socalled enemies' mistreatment, and a few individuals. He still cannot understand it is possible that he and some of the German people have made mistakes, and that perhaps the wish-fulfillment of his powerful army may not be so powerful when they are starved, have no money, no business, and find that Hitler is crazy. He cannot imagine that the democracies are powerful. He sees only what he wants to see. A child believes that his father is the strongest, the most powerful, the richest, the best fighter, etc., which also involves wishful thinking. There is some childishness in some insane thinking, as well as in neurotic thinking.

10. Unconsciously and emotionally, Hitler admits defeat and is losing confidence, as shown by the Goebbels and Schact episodes, and realizes that the democracies cannot be so easily infected with wholesale paranoia and his ideas. He knows that he must now lose ground. There is also a guilt feeling. What can he do under these circumstances? He reverts back to his same old patterns and mechanisms, through accusations, blame, and threats, and reassures himself with his friends, Mussolini and the Japs. Now he looks for some one large group to punish or kill off, or to war on, or else he may have to step out and disappear. Originally he intended to get more than the Sudetan land, but did not admit it. Later, he became frightened, but pushed on because of his fear. Fear begets fear for a certain period only.

11. "Eighty-million people will not starve," has two meanings. First, he wants to boast and let you know he is powerful and that he represents such a large number of people. He does not think, however, that if things do not go smoothly all the way, this large number of people will turn against him rather than to him. The democracies also know that eighty million are not now voluntarily for Hitler. Secondarily, if his back were against the wall and if we do see through him and his tremendous guilt, and if he is found short, he is beginning to think that perhaps there is one chance in a million he may be wrong. Then you will consider his millions of people and forget and forgive his atrocities and his other wishful-thinking.

12. You may ask the question, why did Hitler repeat with emotion over and over again the same old accusations and threats? The answer is, these delusions are on his mind and it fits best his economic and pleasure principles to be so obsessed. His mind is obsessed. Then he praised Japan for the noble and wonderful work they are doing in the East. In his mind destruction, killing, pilfering, stealing and wholesale murder are wonderful work, because it is "identified sadism." If the Japs are sadistic, he also gets a referred "kick" out of their sadism. Then, too, if wholesale murder in the East is fine work, then wholesale murder in Germany is fine work. It protects and spares his guilt feelings. It is a defense mechanism. And big, powerful Hitler who wants to fight the world, has to stoop, bow and flatter Japan. Why? Because Hitler is scared. Is all of this normality? If it is, who does not want to be insane? But we know that this is not normality in the slightest degree.

13. Hitler's repeated reference to his friend Mussolini having invincible power, has several meanings. First, it is wish-fulfillment on the part of Hitler, because he is scared. Second, big, powerful Hitler must bow, cater to and flatter Mussolini, because he is scared. Third, he wants to scare the democracies by referring to Mussolini's strength, because Hitler is scared. And fourth, he wants to show his people and the world that he is a great statesman and a diplomat, to such a degree that a great man like Mussolini is his staunchest friend, which is a defense of his own guilt feelings and shortcomings, and of being a poor diplomat, which we all know. Even if he were not insane, his lack of education, and his defective background, together with his ignorance and lack of world knowledge are sufficient to keep him from making a good diplomat.

Then, too, he wants to threaten the world by proclaiming that he and Mussolini and others will fight the world unless it gives him what he wants. He is fool enough to believe that Germany, Italy and Japan could whip the world. He does know, however, that the democracies know their strength and their greater potentialities. The democracies postponed war because they are not sadistic and do not want any bloodshed even though the democracies could in time swallow Italy and Germany together, including Japan. Yet at times, he may get crazy notions that he alone can whip the world. I wonder whether he thought it possible that England and Italy could become so strongly attached to each other that Mussolini could not give Germany any backing. Then Hitler is to become a suicide or is to be assassinated. It is a serious situation when the leader of a nation must depend on another dictator for his own life. So he must praise Mussolini. Hitler has lost confidence in himself. He is afraid of the slogan "Hit Hitler" for he is guilty. His own sins will find him out and hang him, even though he is a paranoic.

The Unconscious Mechanism of Hitler's Mind

Hitler is already hitting himself, for he is not entirely sadistic, he is also a little masochistic. He punishes himself to some degree now. He is taking himself to certain battlefields and exposing himself to some dangers though he is surrounded and well protected by Nazi forces. He is also punishing himself by creating greater and more enemies, and by denying himself certain food and drink and other organic pleasures, perhaps, because of his psychosexual guilt feelings, but he rationalizes and explains his acts in terms of health practice. His own guilt feelings and the guilt of the world are on his weakened head and shoulders.

Why did Hitler's sadism include the Jews and the communists? Why did he not select the Eskimos or the Brazilians as his sadistic targets? The answer is quite simple. The Old Testament is full of the Israelites, the Jews, and the New Testament is concerned with Jesus Christ who was an orthodox Jew, who had Jewish Apostles, etc. The Old and New Testaments deal with morals, ethics, religion, etc. The Jews are associated with both Testaments. Hitler has unconscious guilt feelings. If he is sadistic, what unconscious sources make him feel more guilty than the Bible and the Jews. The unconscious and conscious associations will force his sadism on the Jews. Why should he fight Communism so strongly? From the unconscious viewpoint of the associations, there is a connection of the thoughts, Jews are bearded and so are Russians. Jews live in

Russia. Russia is communistic. Therefore Jews are communists and his sadism is directed in the direction of the two, which is one and the same in his mind. He would very much like to destroy the Russians, also, if he could. It is true that his reasoning here is ridiculous, but it is unconscious reasoning which is usually ridiculous reasoning. The unconscious is not only illogical, but dishonest, animalistic, unethical, lacking in altruism (except in case of the superego, which Hitler certainly lacks).

A part of the unconscious which is philanthropic, considers the others before one's self and tries to help humanity, is certainly one trait which is not attributable to the dictatorships. There is very little selfishness in the superego. Why could not Hitler's unconscious drives have turned in these directions? He inherited and acquired in his home and in his environment unfortunate traits. Great parents can never give birth to a Hitler.

Will Hitler ever let up on the Jews? The answer is decidedly no, because it all depends upon his insanity, which is incurable. It is most unusual for a paranoic to be cured. What is the future of Germany if Hitler remains as he is? Germany will have to regress under the leadership of a paranoic. If he could be made inactive or a figurehead, then Germany might regain what she has lost under Hitler, but it would take a long time. She may never regain her former standing, because of the past and present world wars, and largely because the minds of the children have been poisoned. Hitler is definitely suffering from paranoia, which is a recognized form of insanity, and it is usually incurable. This man is head of Germany. Therefore, such a head is dangerous for any country, but more particularly in the country where his activities are directed according to his desires.

Going a little deeper into Hitler's unconscious, he has a socalled "sister fixation" which is an unconscious and emotional attachment (to an extreme degree) between himself and his sister. This is the main reason for his remaining unmarried, although he and others may give a thousand other reasons. Should he get married, he will be unhappy, not only because he is a paranoic, but also because he has a fixation of this kind, unless he should find someone almost like his sister, who must deviate very little. This is a difficult finding, almost impossible. These fixations date back to childhood and there is a tremendous guilt feeling (unconscious) associated with it. This guilt feeling is general and yet unconscious. Masochism is also usually associated with fixations. This is a condition where the individual actually wants punishment, sympathy, has self-pity, and gets himself involved in various difficulties, and this is unconscious. There are other fixations, such as mother and father fixations, aunt, uncle, brother, etc. But it is the "sister fixation" which carries with it the strongest guilt feeling. Sometimes this "sister fixation", with its masochism, is projected into sadism. This is a common mechanism of Hitler's and also in paranoia. The greater the guilt feeling, the greater the projection, and particularly the greater the sadism. The person who is either sadistic or masochistic, or both, is usually unconscious of these facts. Yet, these persons plan and scheme and most of their rationalizing and thinking are in the direction which will result either in masochism or in sadism. Furthermore, these people's likes and dislikes depend upon whether they will bring masochism or sadism. When one's mental mechanism functions to a small degree which produces mild masochism and sadism, it may be considered normal; when increased in degree, the individual is neurotic, and when carried to extreme, the person is insane.

The motivation, the dynamics, and the real causes for Hitler's killings, punishments, and destructions are unconscious. The various plans, ways and means of carrying out these sadistic punishments are conscious.

One lunatic, who is surrounded by other lunatics in a trusting, busy and unconcerned sleepy world, can create terrific tragedies and punishment, with suffering for long periods, but this lunatic and his cohorts must finally lose.

416 OCEAN AVENUE

Cannabis Indica

Cannabis indica or Cannabis sativa, also known as hashish, Indian hemp, bhang and marihuana, is grown extensively in many countries. For a thousand years or so, a narcotic has been extracted from this plant and has been used largely in Egypt, India and other oriental countries. In recent years its abuse has spread to western countries.

Hashish is among the oldest and most prominent of the narcotic drugs, and is also one of the most widely abused. While its therapeutic value is regarded nowadays as almost negligible, not long ago it was used medically for spastic conditions, as an analgesic, for migraine, and for its sedative and hypnotic action on the nervous system. The hashish vice is reputed to have its origin among the ancient civilizations. It is derived from Indian hemp and there is a tradition that the Emperor Shen-Nung of China, in the twenty-fifth century B.C., taught the Chinese people to cultivate hemp for its fiber. The narcotic properties of hemp are said to have been known by the famous Chinese surgeon, Hua To, about 220 A.D.

In India the Susruta, which was probably compiled before 1000 B.C., refers to bhanga as a remedy. To the Hindu the hemp plant is holy, while the intoxication obtained from hemp drugs has evidently been especially adapted to the Hindu temperament, and is today so much a part of their life and customs that the government of India declared not long ago that it was neither practical nor advisable to attempt to exterminate the practice. It was known in Persia centuries B.C., as well as in Assyria, Greece, Rome, early Hebrew times in Arabia and Egypt. In these days the habit is widely distributed throughout the world.

Some difference of opinion exists regarding the aftereffects of hashish, some believing these effects to be comparatively harmless. By others this outcome is denied and it is claimed that in India and Egypt many cases of insanity are ascribed to the abuse of hashish.

In the United States the smoking of hashish in the form of marihuana cigarettes is more or less prevalent throughout the country. It may be true that in moderation marihuana does little physical or mental harm, but excessive indulgence may lead to general debility, premature decay, mental deterioration and to criminal actions. A reason for the habit is, perhaps, the nervous tension and irritability brought about by present day conditions. The drug gives relief for a time from the troubles of a world upside down.

A POPULAR ESSAY ON AIR

SMITH ELY JELLIFFE
New York, N. Y.

(*Continued from page 265*)

To us, the inhabitants of this particular planet known as Earth, air or fresh air means a combination of three gases which must be held in certain definite proportions or life cannot continue. This proportion, which is found existing in open air where there is no possibility of other contamination, may be stated as follows. In 10,000 volumes of air, 2,096 volumes are oxygen and 7,900 volumes are nitrogen. These proportions scarcely ever vary more than ten volumes in ten thousand. On high mountains the air sometimes contains two volumes more of oxygen and sometimes in towns it has nine volumes less in ten thousand than the average. It is thought that in wet or foggy weather there is a trifle more of oxygen than at other times.

It will be noticed in the average proportions of oxygen and nitrogen that there are four volumes lacking to make up the ten thousand. This is the proportion of carbonic acid gas in the air. Although it is injurious to health in large quantities the air would not be in proper proportions without it, for it is necessary for the existence of plants, therefore fresh air includes this small but definite amount of carbonic acid gas. Besides this there is considerable watery vapor in the air, the amount of which varies, as has been shown, with the temperature; and also a trace of ammonia, salts of sodium, and other mineral substances, besides ozone and organic matter, either living microbes or impurities thrown off from the body. All of these may exist in socalled fresh air provided they do not overstep certain limits.

These various gases do not combine with one another as hydrogen and oxygen do to make water, or as salt dissolves in water; but their molecules mix together as grains of salt might mix with grains of sand. When ordinary coal gas escapes from a gas burner it flies to all parts of the room, so that in a moment the gas, which would be deadly if confined to a small space, is diluted in a large quantity of air. Were it not for this fact of the diffusion of gases it would be very difficult to keep their proportions in equilibrium. As it is, any excess of a noxious gas can be quickly counteracted by letting in a little outside air to dilute it.

The great inert mass of nitrogen in the air is started into activity only in electrical storms. Every flash of lightning which darts across the sky, every electrical spark great or small passing through the air, causes a minute proportion of nitrogen and oxygen to unite, and with water they form nitric acid. Without the spark of electricity the atoms of these two gases mingle in space as do the grains of saltpeter and charcoal which form gunpowder, but which may be sifted through the fingers with perfect safety, until the powerful influence of fire unites them chemically. Some chemists have thought that as electricity is so constantly displayed in the air, a trace of nitric air should be counted as one of the constituents of air, but as its presence is local, occurring only along the line through which the spark travels, it must be considered as an occasional constituent. The nitric acid manufactured in this energetic fashion falls with the rain, which is sometimes sour from its presence. It has been calculated that on an average about two pounds of nitric acid fall annually on each acre in Europe. The effect of such acrid watering is very beneficial to plants, as all nitrogenous food which they get from the soil is in the form of nitrates dissolved in water. A series of interesting experiments, however, are beginning to lead students of plant life to think that possibly some plants obtain a little nitrogen free from the air. For it has been found that beans which are highly nitrogenous, when supplied with a certain definite amount of nitrogen in the form of nitrates during their growth, will, when grown, have evolved in some mysterious manner four or five times as much nitrogenous matter as they took from the soil; leading observers to conclude that they helped themselves to it from the air.

Ammonia, which is always present in the air in very slight quantities, is, like nitric acid, another compound of oxygen, nitrogen and water; it is present in larger quantities in summer than in winter. Ammonia and sodium chloride, as well as some other inorganic salts, are given off in perspiration. Of course as they pass through the skin they are dissolved in water, but as the hot air vaporizes the water these salts are carried off with the vapor and float around in the air until a shower dissolves them and carries them down to the soil where they add their mite as food for plants. In other cases the ammonia rises from decaying organic matters in the earth, as from decomposing leaves and from manure.

It is said that every gallon of rain water that falls in England has half a grain of sea salt in it and all seaboard countries have varying amounts. It was once reported that at a town some thirty-five miles from the English Channel there was found in the rain water not less than six and a half grains of common salt in each gallon. The origin of such salt is of course the sea water which has been blown as spray, and which when vaporized carries the salt into the air.

Sometimes on high mountains, especially after a thunder storm, there is a peculiar odor as of phosphorus which is due to the presence of ozone. Just what ozone is or what place it occupies in the economy of nature it is difficult to say. It is agreed by all chemists that it is a condensed form of oxygen, and it has been proved to oxidize many things that oxygen will not touch. When ozone is heated and has its molecules spread far apart it becomes oxygen. The amount of ozone in the atmosphere is so small that it is estimated at less than one part in ten thousand. This being the case, it is easy to see that it can seldom be detected by the sense of smell. It has, however, a peculiar action on a chemically prepared paper which it turns blue, and which is called ozone paper. This test is not a very reliable one, for one can only guess at the amount of ozone by the depth of blue and the rapidity with which it turns; but it forms an interesting experiment in the heart of a large city, for there, or in crowded dwellings, or where there is any decaying substance, the reaction will not take place. There is found to be more reaction

on the tops of mountains than in the plains and more at the seashore than in flat inland places. Therefore the presence of ozone may be considered a sign of a healthy locality, not on account of any benefit arising from its one part in ten thousand, but because its presence is an indication of pure air.

What Constitutes Impure Air

The question which has been of great interest to chemists concerning the sanitary effects of air has been to find out what made air impure, whether it was the lack of oxygen, or the excess of carbonic acid gas, or whether the organic impurities thrown off by human beings and animals were chiefly responsible for rendering houses, schools, and all buildings unhealthful when they were overcrowded. In the first place, there is not the slightest danger that the supply of oxygen will ever be exhausted, for although the yearly consumption amounts to two and a quarter billions of pounds, this, in a hundred years, would only reach two hundred and twenty-five billion, which is not one ten thousandth part of the whole. Moreover, the oxygen thus used is not as though one were encroaching upon capital which at some sure date, though ever so remote, would come to an end, for the oxygen which is used in breathing or in burning is returned to the air in combination with carbon, as carbonic acid gas, which in turn is taken in by plants through the minute breathing pores on their leaves and stems. They use the carbon and return the oxygen to the air; so the oxygen is as it were invested, and brings in returns which keep the capital up to its full value.

It must always be remembered that the amount of carbonic acid gas is very small compared with oxygen, which averages about one-fifth of the air, while the carbonic acid gas is only one two thousand five hundredth part of the atmosphere. It is a heavy gas weighing half as much again as the air. It would therefore be natural to suppose that it would sink to the floor of audience rooms and to the valleys of countries; but on the contrary it is often found in large quantities near the ceiling of a theatre and there is slightly more on the mountain tops than in the plains. The reason for this is that gases are not like liquids, for one may pour mercury, water and oil into a tumbler, and each will keep to its own layer according to its weight. But gases mix irrespective of their weights, hence in a crowded theatre as the source of carbonic acid gas, beyond the average quantity in the air comes from the breathing of the audience and from the lights, and in both cases is heated, it is expanded and borne upwards.

In the case of the mountain supply, the plants of the valleys and hillsides, and the waters of lakes and seas use up the average supply of carbonic acid gas from the lower layers of the air faster than it can descend from the higher layers to supply the need. But even when all out of doors is concerned the excess is so slight as to be hardly appreciable. Therefore the arguments for and against the question whether flowers are healthy in a sleeping room or not have so slight a basis as to have practically no value, except on the general principle that where flowers have sufficient warmth, light and fresh air to flourish, human beings will be apt to thrive also. Carbonic acid gas is nevertheless frequently found in low-lying places to the great detriment of health, as in the Cave of the Dog near Naples and in the deadly gas lake of Java. In the former carbonic acid gas issues from subterranean caverns faster than it can be diffused through the air so that where a man can enter, a dog will fall senseless and soon die by inhaling the noxious but odorless gas that lies at the low level of his head.

Such excesses of carbonic acid gas are seldom met with in nature; as a rule the amount of gas varies from four to seven volumes in ten thousand; when it reaches the latter amount in the schoolroom or a crowded dwelling it is usually accompanied by a disagreeable odor of closeness. But it is stated that men working in soda water manufactories often breathe air that contains twenty volumes in ten thousand without feeling inconvenience. In other occupations where, however, tests as to the exact quantities have not been made, serious accidents have sometimes occurred, as in grave digging, or in digging deep wells or drains. The workmen in these places frequently suffer from headache over their eyebrows and from nausea. In mines this gas is often fatal. It is known as chokedamp, for it contracts the throat spasmodically. It has been found that it is absolutely impossible to breathe it pure for the lungs will not receive it, but it can just be respired, with of course dangerous consequences if continued, when it is mixed with twice its volume of air. It is very difficult to free mines from this gas. Sometimes water is sprayed through the mine for it is soluble in water and in solution has no evil effects as all know who use soda water as a beverage. Sometimes baskets of lime are suspended in the mine for it greedily absorbs the gas which combines with the lime. So sure is this that lime water when breathed into becomes milky white from the formation of white particles of lime, and if clear lime water be allowed to stand a little while in the air it soon becomes cloudy from the minute quantity of carbonic acid gas that is usually present. Lime burning is also a dangerous and unpleasant occupation, for the carbonic acid gas that is driven out of the lime by heat has often overcome workmen, who, resting in the warmth near the kiln, have fallen asleep and died.

It has been found by experiments that different persons can stand different amounts of carbonic acid gas for a short time. Two scientists report that they were able to breathe an atmosphere of which one-fifth was carbonic acid gas, that is, the equivalent of the oxygen in the air, for two hours without hurt. But others who tried the same thing found that immediately their breathing became heavy and labored, their faces were flushed, their lips turned blue, and at the end of one or two minutes they had nearly lost consciousness. Such experiments are made with an amount of carbonic acid gas so vastly in excess of the quantity contained in the air as to have no bearing upon ordinary air that is rendered close by the presence of many people. It is said that when the amount of this gas in a room rises from four to seven parts in ten thousand volumes, that a close smell can be detected by anyone coming in from the outside air, and that persons remaining for several hours in such an atmosphere will be warm and flushed and experience the well-known heavy, drowsy feeling accompanied by dull headache that is so difficult to avoid in poorly ventilated schoolrooms or audience halls. Certainly the odor of a close room does not come from the carbonic acid gas which is quite odor-

less. In a small room, which was charged with the gas for the experiment, there was no odor whatever perceptible on entering from the open air, although there was from ten to twenty times as much gas as in the most crowded and worst ventilated public building. Much of the discomfort of close rooms is due to the sense of smell which perceives what is very difficult for the most watchful eye and the finest microscope to detect, that is, the impurities of organic matter which are given off from the body and from the breath. It has been found that water which has been breathed into is rendered unpleasant to drink not by the carbonic acid gas but from certain matter which must come from the lungs and which is not a gas, but which seems to consist of minute particles. This matter is odorous but a plentiful supply of oxygen will keep it fresh, lacking which, however, it putrefies in the air and renders the atmosphere offensive. Beside this unknown quantity the breath contains little particles of the fine scale-like epithelium that lines the mouth, as well as minute particles of fatty matter. By means of perspiration many substances are given off which, if coming from the body of anyone that is not perfectly clean, will render the odor of the air most unpleasant.

It has been found that the amount of carbonic acid gas in air that has been contaminated by the presence of human beings or animals is generally an index of the amount of impurity given off from the body, not because they are dependent one upon another, but that the same cause is responsible for both. Thus it is usual to estimate the impurities by the amount of carbonic acid gas present, whether or not that is the chief and the most dangerous impurity. Because the manufactured gas can be breathed in much larger quantities without injuring health many experimenters have thought that its increase in a room from breathing and from burning gas, over the amount in the outer air, is only of importance because this was in direct proportion to the amount of unpleasant and offensive impurities which are given off from the bodies of men and animals, and which they suppose to be the dangerous element. The amount of carbonic acid gas can be easily tested by allowing a glass of lime water to stand in a room and note the length of time it takes to become cloudy, therefore those who hold that it is the organic matter that is dangerous measure the amount of carbonic acid only as an easy means of gauging the amount of other impurities although they do not consider it in itself an impurity worth measuring.

It is not enough to note the pale consumptive looking people who live in crowded, ill-smelling, dirty dwellings as a proof either of the effect of an excess of carbonic acid gas, or of the impurities given off by the body, for often other conditions, such as lack of exercise, want of good food, the habit of drink, or hereditary tendencies play a large part in the cause of their miserable health; experiments upon healthy individuals alone can be counted. It is found in certain experiments upon animals who were made to breathe air from which the carbonic acid gas and watery vapor had been removed and only the organic impurities from the breath were left, that the effect was very injurious. A mouse subjected to such treatment died in forty-five minutes and men who had been experimented upon had a fever, a quickened pulse and a furred tongue for a day or two after breathing such air. Of course when the air is rendered still more impure it is terribly fatal from one cause or another, as when the three hundred Austrian prisoners were put in a small prison after the battle of Austerlitz and two hundred and sixty of them died within a short time. The fearful tales of the Black Hole of Calcutta, and the sad fate of the passengers on board the steamer *Londonderry* who were shut under the closed hatches during a storm, and who died before the order was given to open them, are historical extremes which show the poisonous effect of the impurities of the human breath upon human beings.

It has been thought for some time past that the unpleasant effects of badly ventilated rooms, the headache and vertigo, were caused more by the organic impurities thrown off from the body, than by the presence of carbonic acid gas; but an interesting set of experiments, lately performed, has proved, we believe conclusively, that it is the slight increase of carbonic acid gas combined with the corresponding decrease in oxygen that gives the unpleasant effects.

The experiments were carried on in a little air-tight room built just large enough for one person to sit or stand in, and provided with a large window on one side through which the experimenter could watch his subject. There was a little tube placed in this chamber by which a small amount of air could be drawn off from time to time and be examined. The poor victim who offered himself for the first test stayed in his prison for five hours and a half when he begged to be let out because he was greatly exhausted by his heavy labored breathing, for his respirations had increased from eighteen to thirty a minute. He had a slight headache which became violent and was accompanied by nausea when he left the room. As soon as he came out the experimenter quickly shut himself in to see what sensations he felt. He found the air not at all stuffy and without odor although the carbonic acid gas had increased from three to sixty-three volumes in ten thousand, and the oxygen had decreased from two hundred and nine to one hundred and thirty; but he immediately began to pant as though he had been running. He tried to strike some matches but there was not enough oxygen to allow the phosphorus on the match to burn. There must also have been a great deal of organic matter present if its quantity kept pace with the carbonic acid gas, but though the vitiation of the air was from ten to twenty times as great as in a crowded lecture hall or a badly-ventilated theatre there was no perceptible odor. It has often been said that where a light cannot burn a man cannot breathe. but it was found in this experiment that a match would not burn when the air was only one-fifth as bad as a man could stand.

The next experiment was to find out what the effect would be if the oxygen were lessened without adding any carbonic acid gas, so a tray of soda lime was put in the chamber, which absorbed it as fast as it was given off. The man stayed in for nine hours, and only during the last two was he a little short of breath though after three hours a match would not burn. The experimenter on going in found it very hot as the temperature had gone up seven degrees but he did not pant much.

Still a third experiment was tried. This time carbonic acid gas was passed rapidly into the chamber. In the

few minutes that the experiment lasted the subject found breathing more and more difficult until he was panting at the rate of thirty-four respirations per minute. Headache and all the symptoms of vitiated air were present, but matches he found would burn because the oxygen was but slightly diminished.

It was therefore concluded, as a result of these experiments, that an excess of carbonic acid gas combined with the decrease in the oxygen must be the chief cause of the pain and oppression which is frequently felt in a close room. But it is by no means the cause of all the disagreeable sensations. A public hall where lights are burning grows very warm, and the air becomes laden with moisture so that perspiration is not free. This sense of irritation in the skin combined with unpleasant smells and the painful necessity of sitting still, as is the case in school rooms and in audience halls, produces drowsiness and great physical discomfort, which, however, has no serious effect upon health if it lasts for only a short time. The close smell of a bedroom may often be caused by the fact that feathers and wool absorb moisture much more readily than hair and cotton and are therefore apt to hold the impurities of the skin. Clothes that have been hung in closets also add to the sense of closeness, and although that which causes the odor is not in itself injurious, nevertheless a close smell is a sufficient guarantee that there has not been enough fresh air.

Ventilation

The constant dilution of impure air by fresh air is known as ventilation. The simplest way that this can be accomplished is by making two openings in a room, one for the wind to blow in, as a window, and the other for the impure air to go out, as another window or door. But this case of ideal simplicity proves very uncomfortable when the outside air happens to be zero and the fresh air rushes in, in a blast. Ventilation would be a difficult feat in houses that are built in rows or in large buildings if the air were a mass that had to be displaced by pushing it by main force out of a room. It is, however, rendered easy by the movement of the air in currents, for every house has its own particular currents that are adapted to its arrangements. This may be seen by burning a pastel in one room and following the natural currents of air through a house by the sense of smell.

Every window sash lets in considerable air which is hardly perceptible except in very cold weather, and as the wind will pass through walls of wood and even of brick and stone, a cold house is often a very healthful one to live in. A fire is a great source of ventilation because it starts currents of air. The air nearest the fire is heated and expands and forces its way out of every outlet it can find. If it is an open fire much of the hot air will rush up the chimney; then cold air will pour in from every chink and cranny to take its place and restore equilibrium. Often a draught of cold air rushing down the chimney meets the smoke-laden air coming up and a smoky room is the result, until each current establishes its right of way. Every gas jet makes a little fountain of hot air that rises to the ceiling and forms currents which, however, cannot fall below the level of the gas jet because the air beneath is so much cooler, as may be seen in mounting a step ladder or any unusual height, when one passes from a cold stratum of air to a hot foul one which is almost suffocating with carbonic acid gas and watery vapor.

The natural exit for hot air is by an opening at the top of the room and the natural entrance for cool air is nearer the floor. This is shown in the fact that a candle held at an open door will have the flame blown outward by the escaping hot air if it be held at the upper part, and blown inward by the cold air if held in the lower part of the doorway. There is no doubt that the natural laws of the air will insure perfect ventilation simply if an inlet and an outlet are provided, but man is so accustomed to directing these laws that he does not propose to be left to the mercies of atmospheric changes having the fresh air blow through his house like a whirlwind one day and creep softly past his windows without entering another time. Consequently, elaborate systems have been worked out to provide for cold and warm weather, for winds and calms; systems that will apply to private dwellings either for one family or for fifty, for school rooms and for audience halls and for hospitals.

The subject has become one of sufficient importance to require legislation so that it is against the law to erect buildings that do not give each person inhabiting them a certain number of cubic feet of air which can be changed by ventilation. The great difficulty in carrying out such a system is, not where to get the fresh air, but how to get it in comfortably and without danger to health. It has been estimated that the average human being needs three thousand cubic feet of air in an hour, that is, if a man were in an airtight room that measured fifteen by twenty by ten feet, in an hour's time he will have breathed out enough carbonic acid to make the air unfit to breathe over again. This large requirement would soon put an end to the social habits of the race if it were not that the air could be changed many times in an hour. If there were an average gas jet in the room it would make about ten times as much heat and produce twice as much carbonic acid gas as the man does. For this reason incandescent lights reduce the problem of ventilation considerably for they give off less heat than a man does and do not vitiate the air at all.

Suppose that this average man were a lusty individual, and were devoting himself to hard labor by the light of his average gas jet for the space of one hour. He would render about ten thousand cubic feet of air unpleasant, and his gas jet would do likewise for some seven thousand more. Thus, in a room of three thousand cubic feet he would have to have the air changed about six times in an hour to provide him with the requisite seventeen thousand cubic feet. Now put ten men and ten gas jets in the room, all working hard, which is not nearly as close quarters as many night workshops have, and the air would have to be changed ten times as often, which amounts to sixty times an hour. This would require a strong breeze blowing through the room to keep it perfectly fresh, and unless it could be warmed first in a hall, it would be worse, in the workmen's estimation, than the closeness. What wonder then, that the men and women and children living and working in crowded quarters and never having their proper supply of oxygen often grow thin and pale and have poor appetites.

A well regulated school board should insist that each child should have about ten square feet of floor room

which, with a moderately high ceiling, would provide enough cubic space if the air were changed about ten times in an hour; but it is a difficult problem to make a ventilator just large enough to let in the right amount of air, at the right speed, so that it will produce no draught and yet will change the air often enough to keep it fresh. In the hospitals the problem is still more difficult for sick people require more fresh air, as so many more impurities are given off from the body than in health, and the sick are not so able to stand exposure to draughts.

In all buildings the placing of air shafts must be carefully studied so that the incoming air does not pass near sewers or come from cellars, and the heating apparatus must be placed so that the currents they make will find a proper outlet. In short, the scientist when he undertakes to adapt Nature's laws to maintain an artificial equilibrium to correspond with his artificial mode of living in dense communities, has a problem on his hands that Nature would doubtless not care to solve.

Floating Matter in the Air

Dust, that for ages past has been known only as a discipline to housekeepers and an annoyance out of doors in windy weather, has in these latter days assumed proportions of vast interest. The air is full of suspended matter that has been caught up in some way from the surface of the earth or that has been thrown off from plants or animals. It is so light that a passing breeze may carry it sometimes for hundreds of miles. It was thought that the volcanic dust from the eruption of Mount Krakatoa was borne nearly around the globe; if so its particles must have been carried to earth by rains to mix with the soils and food of countless plants and animals.

If a small glass plate covered with glycerine be set out of doors on a windy day it will soon be covered with small bits of matter blown from the street. Of course the quantity depends on how near it was put to the surface of the ground. After a windy night the lower steps of houses and even the window ledges on the first floor will have little heaps of coarse dust sifted in their corners, while a glycerine plate put out of a high window would show only the lightest and finest particles. If this coarse dust were examined microscopically it would be found to consist of a great variety of things, depending upon the locality and the weather and the time of the year.

In country places there would be pollen grains of all kinds of plants, for in the springtime the pollen is so profuse, especially from trees with catkins and from pines, that their golden grains cause what the country people call "sulphur showers". There would also be found bits of stubble and hay, and scraps of feathers and hair from animals, besides minute plants and animals themselves that have been swept up from moist places, as well as light seeds and those that Nature provides with down or wings so that the wind may carry them over fences and up mountains to lodge wherever they find a bare place.

In rocky places and in wet weather there would be very little dust for a large part of the coarse dust comes from loose soil that forms a wet cake in the rain, but that is easily ground to countless particles by the passerby when the weather is dry. The suffocating dust of country roads in a drought is made up of finely ground leaves and twigs, sand, manure and seeds.

In city streets the coarse dust would show quantities of soot, bits of wool, threads of clothes, human hair and particles of decaying food besides finely ground manure. An analysis of the dust in the streets of Dublin showed that near the ground there was twice as much organic matter, that is, of animal or vegetable origin, as there was at the top of Nelson's pillar, which is 134 feet high. This shows that even in closely crowded city streets those who live at the top of high buildings have much purer air than those who live near the street level. The mineral matter of the coarse dust is very annoying in dry windy weather, for sand and gravel are lifted bodily from the earth and blind the eyes; but as a rule, the mineral matter is not injurious except in certain trades where particles fly off into the air and are breathed by the workmen.

The workers in lead mines suffer from lead poisoning and bronchitis due to inhaling the dust. In copper mines the copper dust produces gastric and intestinal disturbance and the workmen have been known to acquire a peculiar brown tint in the skin and a brown expectoration. The manufacture of pottery produces clouds of dust composed of clay mixed with powdered flint which when breathed causes a sort of inflammation in the lungs that gives rise to a peculiar condition known as "potters' lungs". Workmen in steel factories perhaps suffer more from the fine steel dust thrown off in grinding than any other class of workmen; and though various fans and apparatus have been devised to carry the dust off from them, the mortality from lung diseases is very large.

There is in addition to the coarse dust of the air that is only stirred into action by moving air, a fine impalpable dust that the Germans describe as "sun dust". When Tyndall caught these fairy-like motes that had the power to become visible or invisible at will as they passed in or out of a ray of light thrown in a dark room, he found that they were organic. He placed a lighted lamp under a bright beam of light in which the dust particles were wandering in a mystic illumined maze, when in all cases utter blackness as of the densest smoke appeared in the beam over the flame. It was not smoke, but was the blackness of space for the dust particles on which the light depended to be made visible to the eye had been burnt. "Nothing", says Tyndall," could more forcibly illustrate the invisibility of the agent which renders all things visible. The beam crossed unseen the black chasm formed by the transparent air, while at both sides of the gap the thick strewn particles shone out like a luminous solid under the powerful illumination". It was found by experiment that this sun dust would remain in the air even after it had been passed through alcohol or ether; and even caustic potash and sulphuric acid did not destroy it. The fine fibres of cotton wool seemed to be the only thing that could waylay the persistent particles.

(To be continued)

Timothy Holmes, an English surgeon, in 1879, in a debate with other leading surgeons remarked, "No convincing proof of the germ theory as applied to living tissues and living phenomena has as far as I know yet been offered." In 1881 Ogston published his work on the relations of microorganisms to surgical diseases.—Sims' *Connotations.*

News Items

Courses in Dermatology and Syphilology for the General Practitioner.—The Department of Dermatology and Syphilology of the New York Postgraduate Medical School will present a course of lectures for qualified graduates in medicine who wish to prepare themselves for the practice of dermatology and syphilology as a specialty. Details regarding these courses may be obtained by writing to The Director of the School, 303 East Twentieth Street, New York, N. Y.

Russian War Relief.—Dr. J. A. Curran, president and dean of the Long Island College of Medicine, has been added to the list of sponsors of Russian War Relief, Inc. It was announced recently that this agency had raised more than half of the six million dollars necessary for its work in 1942. All money raised by Russian War Relief is used to buy medical and other relief supplies in America for shipment to Russia.

Dr. Stebbins Named Health Commissioner.—Dr. John L. Rice has resigned as Commissioner of Health of the City of New York because of illness. He will be succeeded by Dr. Ernest Lyman Stebbins, professor of epidemiology, College of Physicians and Surgeons, Columbia University. Dr. Stebbins has had extensive experience in the field of public health and is the author of several works on this subject. He was epidemiologist of the Virginia State Department of Health in 1931 and in 1934 joined the New York State Department of Health. He served as epidemiologist for two years and in 1937 was appointed director of the division of communicable diseases and in 1938 was made assistant commissioner of the department.

Appointments and Promotions at the Rockefeller Institute.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research has announced the following promotions on the scientific staff to take effect on or after July 1st:

PROMOTIONS: Dr. Charles L. Hoagland, Dr. John G. Kidd, Dr. Rebecca C. Lancefield and Dr. Joseph E. Smadel, associate to associate member; Dr. Jorge Folch-Pi, Dr. Rollin D. Hotchkiss and Dr. Henry A. Schroeder, assistant to associate; Dr. Ralph P. Elrod, Dr. Claude A. Knight, Jr., Dr. Thomas Laskaris and Dr. R. Walter Schlesinger, fellow to assistant.

NEW APPOINTMENTS: Dr. Francis Binkley, Dr. Lester O. Krampitz, Dr. Raymond E. Mezera, Dr. Mark A. Stahmann and Dr. Frederick C. Uhle, assistants.

Course in Clinical Medicine for General Practitioners.—New York Post-Graduate Medical School announces that courses in clinical medicine for general practitioners will be presented in 1942-43. These courses are designed to help the physician to keep abreast of modern procedures in the diagnosis and treatment of diseases seen in general practice. Some are full-time courses, and many are part-time courses especially planned to enable physicians in Greater New York to study special subjects without giving up their practice. All the courses have been made as practical as possible. Detailed programs of any of the full-time courses described herein will be furnished upon request. Address applications and inquiries to The Director of the School, 303 East Twentieth Street, New York, N. Y.

American Psychiatric Association.—At the ninety-eighth annual meeting of the American Psychiatric Association, held in Boston, Mass., May 18th to 22d, the following officers were elected: President, Dr. Arthur H. Ruggles, Providence, R. I.; president-elect, Dr. Edward A. Strecker, Philadelphia, Pa.; secretary-treasurer, Dr. Winfred Overholser, Washington, D.C.; auditor, Dr. Charles W. Castner, Austin, Tex.; councillors: Dr. James K. Hall, Richmond, Va.; Dr. Titus H. Harris, Galveston, Tex.; Dr. Douglas A. Thom, Boston, Mass., and Dr. Walter A. Treadway, Los Angeles, Calif.

Short Courses for Specialists.—The New York Post-Graduate Medical School announces short courses for physicians in 1942-43 which are designed for the advanced training of specialists in the fields of gynecology, neurology and psychiatry, ophthalmology, orthopedic surgery, otolaryngology, pathology, radiology, surgery, traumatic surgery, and urology. They are not designed to train any physician to become a specialist. Detailed programs of these courses will be sent upon request. Address all applications and inquiries to The Director of the School, New York Post-Graduate Medical School, 303 East Twentieth Street, New York, N. Y.

Hospital Ship Makes First Trip.—The St. John's Guild Hospital ship made her first trip for the summer on July 2d, with five hundred children and mothers from the congested areas of Manhattan on board. The ship formerly went out to Sandy Hook, but this year, because of the war, it goes up the Hudson to the George Washington Bridge. The ship will carry Manhattan passengers every Monday, Wednesday and Friday, and Brooklyn passengers Tuesday, Thursday and Saturday until September 5th.

State Medical Association of Texas.—At the seventy-sixth annual meeting of the State Medical Association of Texas, held in Houston, on May 12th to 14th, Dr. Charles S. Venable, of San Antonio, was chosen president-elect and Dr. Judson L. Taylor, of Houston, was installed as president. Other officers were elected as follows: Vice-presidents, Dr. Robert B. Homan, Jr., of El Paso, Dr. William Howard Wells, of Waco, and Dr. Hubert H. Cartwright, of Breckenridge. Dr. Holman Taylor, of Fort Worth was reelected secretary. San Antonio was chosen as the place for the 1943 meeting.

American Geriatrics Society.—The first meeting of the American Geriatrics Society, an organization for the study of diseases of advancing years, was held in Atlantic City, N. J., on June 11, 1942. The following officers were elected: Honorary president, Dr. I. L. Nascher; honorary member, Lt. Col. J. W. Shuman, M.C., U. S. A.; president, Dr. Lucien Stark, Norfolk, Neb.; first vice-president, Dr. Wingate M. Johnson, Winston-Salem, N. C.; second vice-president, Dr. Walter E. Vest, Huntington, W. Va.; secretary, Dr. Malford W. Thewlis, Wakefield, R. I.; treasurer, Dr. Edwin B. Gammell, Hope Valley, R. I.; executive committee: Drs. Stark, Thewlis and Johnson; membership committee: Dr. Carl A. Williams, Dr. Walter E. Vest, Dr. John A. Bolster, Dr. Edward B. Allen, and Dr. Malford W. Thewlis; program committee: Dr. Edward B. Allen; Dr. Roscoe H. Knowlton, Dr. Carl A. Williams; Dr. John A. Bolster, and Dr. James M. Northington.

Personal.—Dr. Alexander J. Steigman, a member of the staff of the University of Pennsylvania School of Medicine, has been appointed chief physician to the American Red Cross Harvard Field Hospital Unit in England.

Dr. Joseph C. Hinsey, professor and head of the department of anatomy at Cornell University Medical College and for the past six months acting dean, has been appointed dean of the College, succeeding Dr. William S. Ladd who retired recently for reasons of ill health.

Dr. Edgar A. Vander Veer, of Albany, has been elected commander of the New York State Department of the United Spanish-American War veterans.

Dr. David D. Rutstein, chief of the cardiac bureau of the New York State Department of Health, Albany, has been appointed to the staff of the Medical Division, Office of Civilian Defense, Washington, D. C., as medical gas officer to organize instruction for physicians of Eastern States in the medical aspects of chemical warfare. Dr. Rutstein is a diplomate of the American Board of Internal Medicine.

Dr. Fred T. Foard, Surgeon, U. S. Public Health Service, since 1935 regional consultant for Public Health Service District No. 5, has been assigned as Regional Medical Officer for the Ninth Civilian Defense Region with headquarters in San Francisco. Dr. Foard entered the Public Health Service in 1917 as a scientific assistant and has directed rural sanitation projects and county health work in many parts of the United States.

Dr. James W. Watts, associate professor of neurosurgery at the George Washington University School of Medicine, Washington, D. C., has been awarded the John Horsley Memorial Prize of $600 for his paper on "Psychosurgery."

Dr. Marjorie E. Reed, of Plymouth, Pa., has been appointed director of women physicians of the Medical and Surgical Relief Committee of America, by Dr. Joseph Peter Hoguet, the committee's national medical director.

Dr. A. C. Broders, of Rochester, Minn., was recently elected president of the Mayo Foundation Chapter of Sigma Xi.

Dr. Robert F. Pitts has been appointed assistant professor of physiology, Cornell University Medical College.

Dr. William Barry Wood, Jr., associate in medicine at the School of Medicine of the Johns Hopkins University, has been appointed Busch professor of medicine at Washington University School of Medicine, St. Louis.

Dr. Donald Duncan, of Galveston, Texas, has been appointed professor and head of the department of anatomy at the School of Medicine of the University of Buffalo. Dr. Duncan was formerly associate professor of anatomy at the University of Texas.

Dr. Percy T. Magan has retired as president of the College of Medical Evangelists, Los Angeles, Calif., and will be succeeded by Dr. Walter E. Macpherson, Los Angeles, professor of internal medicine and physiology at the College.

Dr. William P. Healy, of New York, was presented with the Janeway Medal of the American Radium Society at the annual meeting held in Atlantic City in June.

Faculty Retirements at Columbia University.—The retirement of eighteen members of the faculty of Columbia University announced recently include Dr. James C. Egbert, eighty-two-year-old director of University of Extension, who joined the Faculty in 1885. Dr. Egbert was president of the Long Island College Hospital, 1917-1930, and in 1930 was elected president of the Long Island College of Medicine. Dr. Robert S. Woodworth, professor of psychology, and Dr. Horatio B. Williams, Dalton professor of physiology, have also been retired.

New Laws Against Prostitution.—Three of the eight states meeting in regular legislative session have passed and adopted new laws for the repression of prostitution, according to *Social Hygiene News*. As a result, Kentucky, Mississippi and South Carolina now have excellent laws against prostitution activities, making a total of at least twenty-two states with adequate legislation. This new legislative program means that these three states now have more effective tools for preventing and controlling venereal disease.

International League Against Epilepsy.—Dr. Wilder G. Penfield, Montreal, was elected president of the American Branch of the International League Against Epilepsy at the annual meeting held in Boston last May. Dr. Charles D. Aring, Cincinnati, was named vice-president and Dr. Frederic A. Gibbs, Boston, secretary-treasurer.

Examinations of Board of Obstetrics and Gynecology.—The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on Saturday, February 13th. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year. All applications must be in the office of the secretary by November 16, 1942. Effective this year there will be only one general classification of candidates, all now being required to have been out of medical school not less than eight years, having in that time completed an approved one year general rotating internship and at least three years of approved special formal training, or its equivalent, in the seven years following the intern year. For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pa.

American College of Chest Physicians.—At the eighth annual meeting of the College held in Atlantic City, N. J., on June 6th, Dr. Jay Arthur Myers, of Minneapolis, Minn., was named president-elect and Dr. Winthrop Peabody, of Washington, D. C., was installed as president. Dr. George G. Ornstein, of New York, was elected first vice-president and Dr. Richard H. Overholt, of Brookline, Mass., second vice-president. Dr. Joseph C. Placak, of Cleveland, Ohio, was unanimously elected chairman of the Board of Regents and Dr. Champ H. Holmes, of Atlanta, Ga., Historian of the College. Conformatory with the by-laws adopted at the annual meeting of the College, the following Fellows of the College will comprise an executive council: Dr. J. Winthrop Peabody, Washington, D. C.; Dr. Jay Arthur Myers, Minneapolis, Minn.; Dr. George G. Ornstein, New York; Dr. Richard H. Overholt, Brookline, Mass.; Dr. Joseph C. Placak, Cleveland, Ohio; Dr. Paul H. Holinger, Chicago, Ill.; and Dr. Charles M. Hendricks, El Paso, Tex.

Critique

Doctor of the Future

In a book published some years ago with the foregoing as a subtitle, the main title being *Pygmalion*, R. M. Wilson said that disease symptoms represent the total reaction of an impaired organism to stimuli. Thus the flutterings of a wounded bird are the reactions to stimuli of a wounded bird. Hence disease symptoms could appear in healthy persons under exertion or shock. A pinching shoe reacts all over us and, like intense heat or cold, can cause irritability or other symptoms. Bad eyes can produce a bad stomach. The organ manifesting the symptoms is not necessarily the organ that is actually diseased because, even to fear and anxiety, each bodily organ reacts definitely, and its normal reacting ability is by so much impaired. Thus circumstances may render normal cells or stimuli unusually difficult to meet. Changes in sense organs may exaggerate the effects of normal stimuli, or there may be actual organic lesions. A whiff of salts will make some hearts dance. Mental influences, fears, anxieties, may act like pinching shoes and upset the entire system. Faith healing may remove malign mental influences which render it difficult for the subject to meet stimuli, thus actually mending organic diseases. A sense of safety with God may react to make a broken leg mend faster. Quacks can often reassure where regular physicians often produce fear by failure to understand the patient psychologically. Ocular, auditory, or cutaneous defects may oversensitize the nervous system, but it may be possible later to effect desensitization. Reactions may be normalized by a sort of educational therapy applied to the organism. The bactericidal power of the blood may actually be increased or diminished by mental means. Rheumatism and trench fever can render the nervous system irritable. Toxins can do the same, bringing on palpitation, pains, breathlessness, and dyspepsia. Hence Wilson said medicine must get at the secret of desensitizing the nervous system, and he held that symptoms represented an inadequate reaction of the organism to life.

Horde Life and the Sex Instinct

With the Army again agitated over the suppression of prostitution as a method of eliminating venereal diseases, a thoroughly unscientific procedure of course, it is of interest to reconsider the findings of Dr. Gerrit S. Miller, Jr., curator of mammals at the National Museum in Washington, announced in 1928. Miller studied the primates, mainly anthropoid apes and monkeys. He decided from his study that human family life was far from instinctive. Human communal life had, he thought, been built up step by step, starting with two persons of different sexes and their children and proceeding to the outward and looser associations of the tribe. He thought that the fundamental sex associations of man were quite like those of the other primates. He thought the human family was not held together by instinct but by an elaborate system of taboos. Man did have a "socially effective love sentiment," but there could also be lasting sex associations between two lower primates from time to time. However horde life underlies all. It lies also in the ancestry of the human race and is fundamental. Sexual promiscuity and prostitution are, therefore, deeply rooted in the basic, primitive psychology of the race. Horde life has been incompletely modified to meet the requirements of human culture.

Chronic Fatigue

This is not just a fake disease devised to cover plain laziness. Meyer Golob called it a definite clinical entity in *Medical Journal and Record* for November 21, 1928 (p. 503). He quoted the classic studies of Mosso and his experiment showing that fatigue could be produced in an unfatigued dog by transfusing blood into it from one that was fatigued. He thought the blood contained fatigue-producing substances—sarcolactic acid, creatin, monopotassium phosphate, and carbon dioxide. Rest was the antidote. Rats were proved more susceptible to anthrax and other infections if fatigued. Sir James Paget was quoted as saying, "Fatigue has a larger share in the promotion or transmission of disease than any other single causal condition you can name". Wells had said, "Symptoms of fatigue, whether general or local, seem to be due to autointoxication with the products of excessive metabolic activity, and part of the symptoms, at least, seem to be due to acid intoxication". Bast had noted a fatigue due to improper metabolism. Fatigue was said to have caused many unnecessary abdominal operations. Professional men and women were excessively susceptible to the syndrome. Morning-hour diagnoses and medical histories were said always to be better than those of the evening. A nap helps fatigue, unless it is chronic. Adequate rest is necessary. Fatigue oversaturation can produce a breakdown, or an infective disease. Quacks inject iron to help the blood of the fatigued who are tired, weak, irritable, and suffer from insomnia and gastritis, whereas they need six weeks' rest and change. Employees, said Golob, chase pleasure so hard on Sunday they are too fatigued to work well the rest of the week. The various types of fatigue were classified in categories.

Clothes

Knight Dunlap discussed the "Development and Function of Clothing" in the *Journal of General Psychology* in January 1928. He argued that the origin of clothes was quite extraneous to moral considerations and modesty. Their retention, insofar as they hide the physique, was due to fear of sex competition on the part of those badly formed who posed then as moralists. When their protests are all overpowered and clothes return to plain utility most sexual moral questions will be solved automatically. Each act of stripping is really a new but a less horrible affront than the one preceding.

Self-Selection of Diet by Infants

An editorial in the *J.A.M.A.* for November 17, 1928 (p. 1552) discussed the self-selection of diet by infants. The changing prescriptions of nutrition experts for children led to the thought that perhaps appetite was too much neglected as a factor in diet selection. Pereira had said years ago: "The natural appetite I believe to be an index of the wants of the system; and ought, therefore, to be consulted, to a certain extent, in the dieting of children; and I believe parents commit a gross error who totally disregard it." Mistaken notions often lead adults to deny to children the foods they crave and this may be wrong.

Davis (*Am. J. Dis. Child.* 36:651, Oct. 1928) allowed recently weaned infants to choose their own food in such quantities as they desired from a wide range of commonly used natural food products, unmixed, unsweetened, and unaltered except for the simplest cooking. The experiment ran many months at this period of life when artificial eating habits had not been formed. No mixed foods were used; instead, the foods were such as are normally chosen for themselves alone—no bread, soup, or custard. The kids selected foods in quantities sufficient to maintain themselves with optimal digestive and nutritional results. They proved to be omniverous, governed by the caloric content of foods, but with definite though changing preferences; they could handle and digest all natural foods, including glands and muscle cuts of meat, safely.

Wisdom of Herodotus: Herodotus tells how Cambyses, King of the Persians, had been wantonly insulting the religion and customs of the Egyptians, and declared he must be mad. "For if one was to set men of all nations to make a choice of the best law out of all the laws there are, each one upon consideration would choose those of his own country. So far do men go in thinking their own laws the best. Therefore it is not likely that any but a madman would cast ridicule on such things. And that all men do think thus about their laws may be shown by many proofs, and above all by this story. For when Darius was king he called to him the Greeks who were at his court and asked them, 'How much money would you take to eat your fathers when they die?' And they answered that they would not do this at any price. After this Darius called the men of an Indian tribe called the Kallatiai, who ate their parents and asked them in the presence of the Greeks, who were told by an interpreter what was said, 'How much money would you take to burn with fire your fathers when they die?' And they cried with a great voice that he should speak no such blasphemy. This it is that men think, and I hold that Pindar spoke rightly in his poem when he said that law was king over all."

The Power of Advertising A few years ago there was a boxed item in *Editor and Publisher* saying "$100 Church Advertisements Bring $1,700 Return". The material went on, "Newspaper advertising was the best investment made in 1923-24 by the Garden Street Methodist Episcopal Church, Bellingham, Wash., according to the pastor, Rev. Dr. J. C. Harrison, who added that $100 worth of advertising had brought in more than $1,700 in silver plate collections." THE CRITIC

Medicoliterary Notes

The Hour Before the Dawn is the title of W. Somerset Maugham's new novel, a publication of Doubleday, Doran and Company. As always, though in the midst of and depicting the horrors of war, Mr. Maugham retains the poise, restraint and good taste of a civilized writer, never indulging in the hysteria, melodramatics or emotionalism of many of the wartime litterateurs. But his style is trenchant, vivid and dignified, and his story of an English family and their meeting of wartime contingencies is told with the real integrity of a man who knows whereof he writes and who must tell the truth about what he has seen and endured.

* * *

Cecil Roberts' novel recently published by the Macmillan Company bears the title *One Small Candle*. The origin of this title was most unusual. The story goes that, just as Mr. Roberts was about to leave England for a lecture tour in this country, he saw on the roadside near his cottage a new memorial stone which had been erected in memory of a pet dog killed by an automobile. The inscription so impressed Mr. Roberts that it lingered in his mind—"There is not enough darkness in all the world to put out the light of one small candle." In blacked-out Europe it rang a challenge, and was chosen as especially appropriate for a story of love and faith that could not be daunted. The novel covers an international field, ranging from Henley-on-Thames to Florida, from Venice to Poland, but it was written at York Harbor, Maine. The author had considerable difficulty in finding anyone in the vicinity to type his book, but at last a girl was discovered who, it turned out, had typed the novel, *The Keys of the Kingdom,* of Dr. Cronin, a near neighbor of Mr. Roberts; needless to say, the girl got the job. Mr. Roberts was asked recently what makes a successful novelist. "He must look like Beverly Nichols, write like Somerset Maugham, and live like J. P. Morgan," was the reply.

* * *

Random House has announced that it will publish next December another of that incorrigible Elliot Paul's books, this one to be called *Gospel According to Hollywood.* The publishers tell us that Mr. Paul's idea is to retell certain Bible stories in such a way that they can "get by" Hays' office in Hollywood. There will be six tales in the forthcoming volume, and they will bear the following titles: "Samson and Delilah," "Fifth Column Work in Jericho," "Noah, the Father of Drinking," "Jonah, the Prophet Who Threw Up His Job," "Ruth and Naomi, or Advice to Young Women by Old Ones," and "Queen Esther, the Beauty Contest Winner."

* * *

Ambassadors in White, by Charles Morrow Wilson, is the story of tropical medicine as told by an experienced traveller and practitioner. The book is a recent publication of Henry Holt and Company. Although the scientific accuracy of the work is unquestionable, its style is simple, clear and nontechnical, and the book will appeal not only to the physician and scientist but also to the layman.

* * *

What served for nipples or nursing bottles before the rubber age? Lately . . . several doctors, asked the question, did not know the answer. One doubted that there were any bottle babies at all in those days. But the first American medicinal textbook on the care of children, published by Dr. William P. Dewees in Philadelphia in 1825, gave directions for preparing a nursing bottle. Over the bottle's mouth was tied a heifer's teat (obtainable of best quality at 33 Market Street), containing a bit of sponge to slow the milk flow.—*New York Times.*

MEDICAL RECORD

A National Review of Medicine and Surgery, Established 1843

FORMERLY KNOWN AS THE MEDICAL JOURNAL AND RECORD

PUBLISHED MONTHLY BY
THE MEDICAL JOURNAL AND RECORD PUB. CO., INC.

Office of Publication: 210 Orchard Street, East Rutherford, N. J.
Editorial and Executive Offices: 70 Orange Street, Bloomfield, N. J.

GREGORY STRAGNELL, M.D. - - - - - *Editor*
A. M. MARLATT - - - - - *Assistant Editor*
N. F. HANF - - - - - - *Business Manager*
C. A. MCHALE - - - *Advertising Manager*

Subscription Price: Under Domestic Postage, $4; Foreign Postage, $4.75; Single Copies, 25 cents.

Remittance should be made by New York Exchange, post office, or express money order, payable to The Medical Journal and Record Publishing Company, Inc., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

MANUSCRIPTS

All material for publication should be sent to THE EDITOR of the MEDICAL RECORD, 70 Orange Street, Bloomfield, N. J.

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AUGUST 1942

Medicolegal Notes

Defendant's Testimony Accepted as to Care and Attention

In an action for malpractice alleged to have resulted in the death of the patient the negligence alleged was failure to give proper care and attention following an operation for tonsillectomy. The New Hampshire Supreme Court held, Michael vs. Roberts, 23 A. 2d 361, that even if a finding that the defendant was at fault could be made upon the evidence that he undertook another operation immediately after the plaintiff's operation was completed so that he was unable to respond to the first three calls made by the nurse, and, second, in responding to a call outside the city soon after the plaintiff had been treated the second time, the plaintiff's case nevertheless failed because the evidence did not establish a causal connection between these alleged acts of neglect and the patient's death, the immediate cause of which the evidence showed to have been a pulmonary embolism.

There was no evidence that the embolism had started prior to the second operation. The patient left the operating room after that operation with the bleeding completely stopped and generally in fair condition. Any evidence of negligence prior to that time, therefore, was dismissed by the court as noncausal.

On the question of whether anything could have been done to prevent the embolism the uninformed judgment of the jury was held worthless and expert testimony was essential. The defendant's testimony, that nothing could be done, was the only evidence in the case upon the point and was necessarily accepted as true. Judgment was rendered for the defendant.

Causal Connection Between Chest Injury and Death

A declaration made by a patient to his physician many days after the accident, that he had received an injury to his chest when he fell off a stool which broke, was inadmissible in evidence in an action on an accident policy because they were not part of the *res gestæ*. But where no objection to this testimony was made by counsel for defendant and the answer was permitted to go unchallenged, it was allowed to remain in the case as part of the testimony. The doctor's testimony was that in his opinion the insured's death was the result of spreading coronary thrombosis caused by injury to the myocardium from a blow on the chest. This opinion was based upon the history of the chest injury obtained from the insured, the doctor's own clinical examination, the progress of insured's condition as he personally observed it on examination of insured's heart following the autopsy. The evidence was held sufficient to show causal connection between the alleged accidental injury and the death. Foulkrod vs. Standard Acc. Ins. Co., Pennsylvania Supreme Court, 23 A. 2d 430.

Test of Care and Skill in Similar Localities

In a malpractice action in New Hampshire, a surgeon residing in Revere, Massachusetts, was called by the plaintiff as an expert and asked certain questions as to the propriety of the treatment in this case and the possibility of other treatment. Revere is a city on the evidence comparable to Rochester, N. H., where the tonsillectomy operation preceding the treatment complained of was performed. But the witness testified that his practice was largely in Boston. It could therefore properly be found that he was really a Boston surgeon. And under the principle that a person who holds himself out as practicing a particular profession is only required to possess the knowledge and to exercise the care and skill of the ordinary practitioner of that profession in the same place or in similar localities, the opinion of a Boston surgeon as to what the defendant might or ought to have done was held not receivable in evidence. Michael vs. Roberts, New Hampshire Supreme Court, 23 A. 2d 361.

Framing of Hypothetical Questions

A hypothetical question is not objectionable because it omits to hypothesize every fact shown by the evidence. An examiner of an expert witness may lay as a basis for the opinion invited only those facts in evidence which conform to the theory the examiner wishes to establish, although the question should, of course, incorporate sufficient facts in evidence to justify the formation of an expert opinion on a material issue in the case. Sovereign Camp W. O. W. vs. Davis, Alabama Supreme Court, 5 So. 2d 480.